

# EMF\*D

**5G, Wi-Fi & Cell Phones: Hidden Harms  
and How to Protect Yourself**

**AUDIOBOOK SUPPLEMENTAL MATERIAL**

**DR. JOSEPH MERCOLA**



**HAY HOUSE, INC.**  
Carlsbad, California • New York City  
London • Sydney • New Delhi

WHAT ARE EMFS?

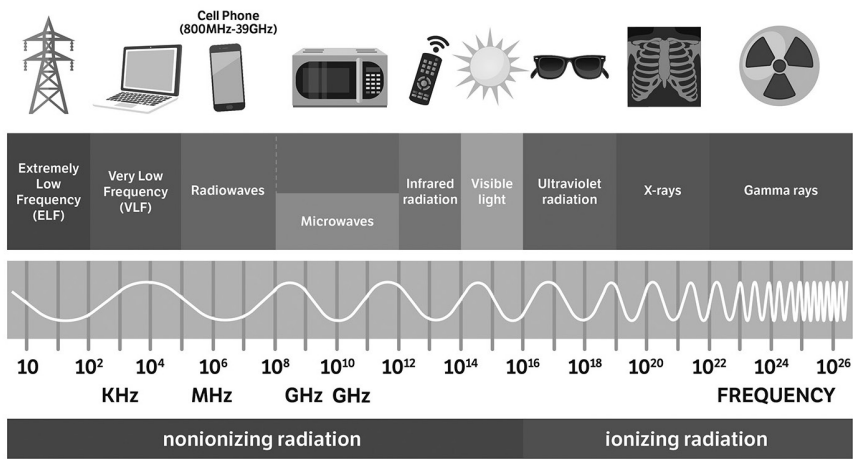


Figure 1.1: The spectrum of EMFs.

Exposure Levels of Different Sources  
of Ionizing Radiation

Ionizing radiation exposure	Dose in millirems
Background	0.006
Chest X-ray	10
Flying at 35,000 feet	0.6/hour
CT scan	200–1,000

Data above compiled from the U.S. Nuclear Regulatory Commission.<sup>3</sup>

## Top 6 Sources of EMFs in Your Home

The following devices emit the vast majority of the EMFs you are exposed to in your home. I will cover how to replace these devices, or reduce the level of EMFs they emit, in Chapter 7; for now, put as much distance as you can between yourself and these devices, as proximity increases exposure exponentially.

- Cell phones, laptops, and tablets
- Wi-Fi routers
- Cordless DECT phones (digital enhanced cordless technology)
- Microwave ovens
- Bluetooth devices, such as headphones, AirPods, fitness trackers, keyboards, wireless mice, printers, baby monitors, hearing aids, speakers, gaming consoles and controllers, Amazon Echo and Alexa-enabled devices, any “smart” device including virtually any new TV
- Smart electric, gas, and water meters

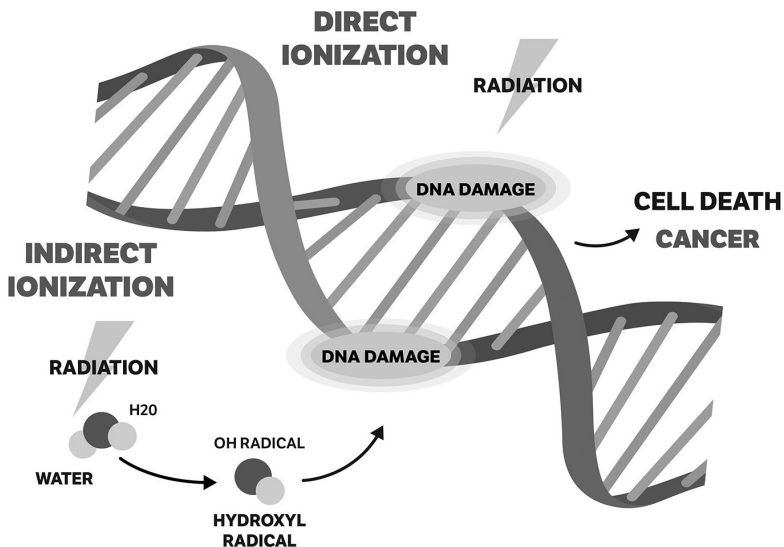


Figure 1.2: How X-rays damage your DNA.

### Common Sources of ELF<sub>s</sub>

- Power lines
- Electrical wiring
- Electric blankets
- All electrical appliances

### Common Indoor Sources of Magnetic Fields

- Faulty wiring and/or grounding issues
- Circuit breaker boxes
- Electric stoves
- Refrigerator motors
- Hair dryers
- Current on metal water pipes (usually found in houses with metal pipes that are on city water)
- Current on other components of the metal grounding system, including TV cable sheathing, indoor metal gas lines, and air ducts
- Point sources, including transformers and motors

## Common Sources of Dirty Electricity

- Compact fluorescent bulbs (CFLs)
- Cordless phones
- Fans with multiple speeds
- Most energy-efficient appliances and furnaces, as they are likely saving energy by turning the current on and off repeatedly
- Many LED lights
- Computers and laptops
- Any electronic appliance with a transformer box at the end of the power cord
- Hair dryers
- Dimmer switches
- Refrigerators
- Printers
- Cell phone chargers
- Televisions
- Wi-Fi routers
- Smart utility meters
- Smart appliances
- Cell towers
- Solar panel inverters

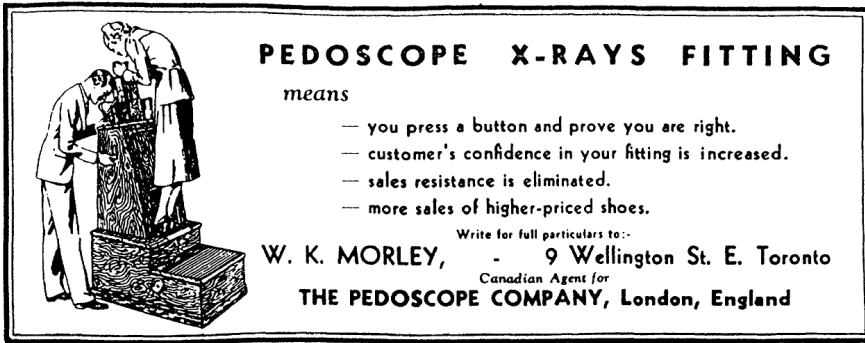


Fig. 1.3. Pedoscope Company Advertisement, *The Shoe & Leather Journal*, 12 June 1938, page 73.

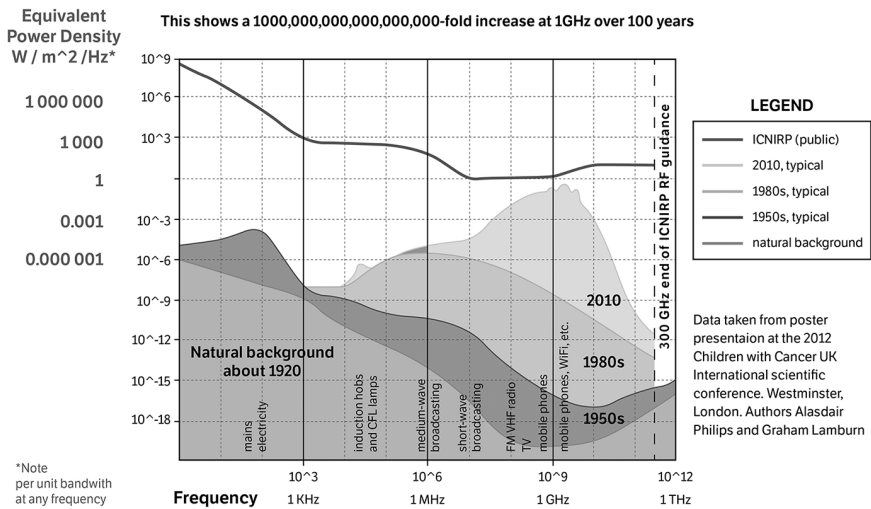


Figure 1.4: Typical daily human exposures over time of natural and manmade radio-frequency electromagnetic power densities, plus ICNIRP safety guidelines.

Whether mm-waves will penetrate homes depends on many factors. Above 30 GHz the waves can slip through long slots such as those around PVC window frames as the metal cores are surrounded just by PVC extrusions. This makes it difficult to shield at the scale of housing.<sup>15</sup>

There truly may be no escape.

Quiz: A primary physical effect of 5G, which relies primarily on the bandwidth of the millimeter wave, that many may be able to sense is:

- ☐ Coldness
- ☐ Paralysis
- ☐ Hallucinations
- ☐ Pain
- ☒ All of the above

## Around the World

<p>Florence, Italy<sup>56</sup> April 2019</p>	<p>The mayor of Florence refused to grant permission for individual 5G towers until the city developed an overarching plan that considers the public health ramifications of such a plan, citing the precautionary principle and the “uncertainty of supranational and private organizations” (such as ICNIRP) that “have very different positions from each other, despite the huge evidence of published studies.”</p> <p>The Italian government has been forced by its supreme court to inform its citizens about the health effects of EMFs and talk about precautionary measures, partially based on the actions of the Phonegate Alert association.<sup>57</sup></p>
<p>Netherlands<sup>58</sup> April 2019</p>	<p>Members of the House of Representatives called for studies of the health effects of 5G before any rollouts begin.</p>
<p>Germany<sup>59</sup> April 2019</p>	<p>Nearly 55,000 Germans signed a petition asking Parliament (the Bundestag) to stop the rollout of 5G frequencies, due to “scientifically justified doubts about the safety of this technology.”</p>
<p>Canton of Vaud, Switzerland<sup>60</sup> April 2019</p>	<p>The Grand Council of Vaud, in Switzerland’s third-largest region, approved a moratorium on permits for 5G antennas until the Swiss Federal Office for the Environment conducts and delivers a final report on the health and environmental ramifications. One Swiss newspaper declared, in part, “[Telecom] operators are furious.”</p>
<p>Geneva, Switzerland<sup>61</sup> April 2019</p>	<p>Following in Vaud’s footsteps, the Grand Council of Geneva also voted to institute a moratorium on 5G rollout. They went one step further than their counterparts, however, by calling on the World Health Organization (headquartered in Geneva) to investigate and report on the health effects of such a rollout.</p>
<p>Rome, Italy<sup>62</sup> March 2019</p>	<p>In the face of the first 5G networks opening in Rome, a resolution of the XII municipality of the city, which passed with 11 votes in favor and 3 abstentions, asks “the mayor to stop the 5G trial and not to raise the limit values in the threshold of electromagnetic radiation avoiding the positioning of groups of mini-millimeter antennas on homes, schools, day centers, recreation centers, street lamps and more.”</p>



Russia <sup>63</sup> March 2019	The Russian Ministry of Defense refused to transfer frequencies for 5G to telecommunications companies, saying it was “too early” to do so.
Belgium <sup>64</sup> March 2019	The Environment Minister of Brussels called off the implementation of a 5G pilot program due to concerns about radiation exposure, saying “the people of Brussels are not guinea pigs whose health I can sell at a profit. We cannot leave anything to doubt.” Many governing bodies of the European Union (EU) are headquartered in Brussels, including the European Commission, Council of the EU, and the European Council. Could it be that they don’t want to participate in the 5G public health experiment?

## American Cities and States Fighting Back

San Francisco, California <sup>65</sup> April 2019	In a unanimous decision, the California Supreme Court upheld a city ordinance from 2011 that requires a permitting process for antennas to be placed on utility poles and other city infrastructure.
Hallandale Beach, Florida <sup>66</sup> April 2019	A unanimous city resolution called on the Florida legislature and federal government to study the health effects of small cells and develop guidelines for the installation of 5G infrastructure that protects public health.
Montana <sup>67</sup> March 2019	The Montana House passed a resolution calling on Congress to amend the Telecommunications Act of 1996 to allow health considerations to be taken into account when determining the location of small cells in residential areas. As of this writing, a Senate version of the resolution was still in committee.
Portland, Oregon <sup>68</sup> March 2019	The city filed a lawsuit against the FCC over the commission’s rules that limit how much cities can charge telecommunications companies to use city property as transmitter sites, saying that the low, FCC-approved fees (capped at \$270 per site) would cost Portland up to \$10 million in lost revenue, as other cities charge up to \$3,000 per site. The city also voted on a resolution to require the FCC to investigate the health effects of 5G and to make that information available to the public.

Palos Verdes, California <sup>69</sup> January 2019	An update to the municipal code created stringent restrictions on where telecommunications towers and antennas can be located, unless an exception is granted.
New Hampshire <sup>70</sup> January 2019	A bill was introduced in the New Hampshire House of Representatives to study the environmental and health effects of 5G. It passed the House and, as of this writing, was being reviewed by a Senate committee. Language in the bill asked, “Why have 1,000s of peer-reviewed studies, including the recently published U.S. Toxicology Program 16-year \$30 million study, that are showing a wide range of statistically significant DNA damage, brain and heart tumors, infertility, and so many other ailments, being ignored by the Federal Communications Commission (FCC)?”
Fairfax, California <sup>71</sup> January 2019	With an eye toward protecting public health, Fairfax passed an urgency ordinance to its municipal code that prohibits small cells in residential zones, requires a 1,500-foot separation between small cells, and requires the city to study the viability of a fiber-optic cable network as an alternative to small cell technology.
San Rafael, California <sup>72</sup> December 2018	This Bay Area city passed an ordinance to protect residential neighborhoods from small cells. This one requires a 500-foot setback from residential districts and 500 feet of separation between small cells.
Sonoma, California <sup>73</sup> November 2018	The Sonoma City Council passed an ordinance requiring a test by a licensed radio-frequency engineer to measure the frequency and power levels emitted by each small cell facility, and giving notice to all property owners within 500 feet of a proposed telecommunications infrastructure site. The ordinance also requires that pole-mounted antennas be no less than 1,500 feet apart.
San Anselmo and Fairfax, California <sup>74,75</sup> October 2018	Inspired by Mill Valley’s ordinances, the Fairfax Town Council passed an ordinance requiring 1,500 feet between small cells and appointed a committee to explore alternatives to small cells. The San Anselmo Town Council passed an ordinance requiring notification to residents within 300 feet of a proposed small cell antenna.

Burlington, Massachusetts <sup>76</sup> October 2018	The city's small cell equipment committee created a policy that requires an application fee of \$500 for each proposed small cell site and an annual recertification fee of \$270. The policy caused Verizon to withdraw its applications, citing concerns about the precedent the policy set and questions regarding its legality. <sup>77</sup>
Booneville, Arkansas <sup>78</sup> September 2018	The city proposed an ordinance that would, among other things, restrict new cell towers to industrial areas.
Mill Valley, California <sup>79</sup> September 2018	The city council of this Bay Area enclave voted unanimously to prohibit new or updated towers in residential zones and to require a minimum distance of 1,500 feet between small cells.
Petaluma, California <sup>80</sup> July 2018	Petaluma updated its municipal code to protect residents against adverse health effects of 5G by station, including the provision that "no small cell shall be within 500 feet of any residence."
Monterey, California <sup>81</sup> March 2018	City planning commissioners voted 7 to 0 to deny Verizon's application for a small cell tower to be placed in a residential neighborhood.
Walnut, California <sup>82</sup> October 2017	One of the first cities in California to push back against the 5G rollout, Walnut updated its municipal code to say that "Telecommunication towers and antennas shall not be located within 1,500 feet of any school (nursery, elementary, junior high, and high school), trail, park or outdoor recreation area, sporting venues, and residential zones."
Pennsylvania <sup>83</sup> June 2017	The Pennsylvania Public Utilities Commission stripped antenna-distributing companies of their utility status, requiring them to go through a standard permitting process to install new poles and taking away their ability to use "certificates of public convenience" to put poles wherever they choose.

<p>Palm Beach, Florida<sup>84</sup> May 2017</p>	<p>Palm Beach and a few other coastal communities lobbied to get a law passed that exempts them from another state law that places strong restrictions on local governments' influence over where 5G small cells are installed. Palm Beach Town Manager Tom Bradford was quoted as saying, "We have been carved out . . . That law does not apply to us." Palm Beach is home to Donald J. Trump's Mar-a-Lago resort. Could the fact that the president's home is exempted from requisite 5G coverage be mere coincidence?</p>
<p>Mason, Ohio<sup>85</sup> May 2017</p>	<p>It's not just cities on the coasts that are concerned about 5G; the town of Mason, Ohio, passed an ordinance that prohibits small cells in residential areas or within 100 feet of property that is used for residential purposes. It also established that small cells must be 2,000 feet apart unless collocated.</p>
<p>Warren, Connecticut<sup>86</sup> December 2012</p>	<p>The city adopted a special permit for telecommunications facilities and towers that urges the Connecticut Siting Council—which, according to state law, has jurisdiction over the placement of towers and antennas—"to locate towers and/or antennas in a manner which protects property values, as well as the general safety, health, welfare and quality of life of the citizens of Warren and all those who visit this community."</p>

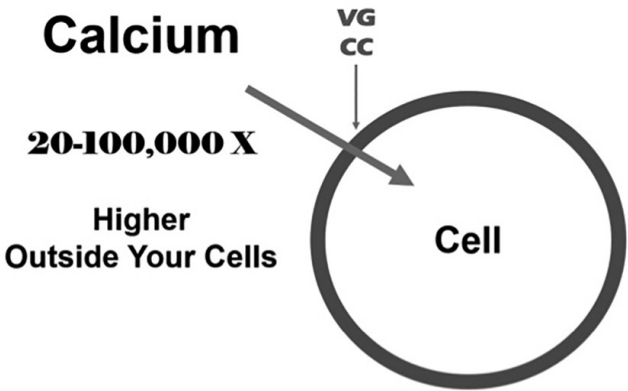


Figure 4.1: Relative calcium levels inside the cell versus outside the cell.

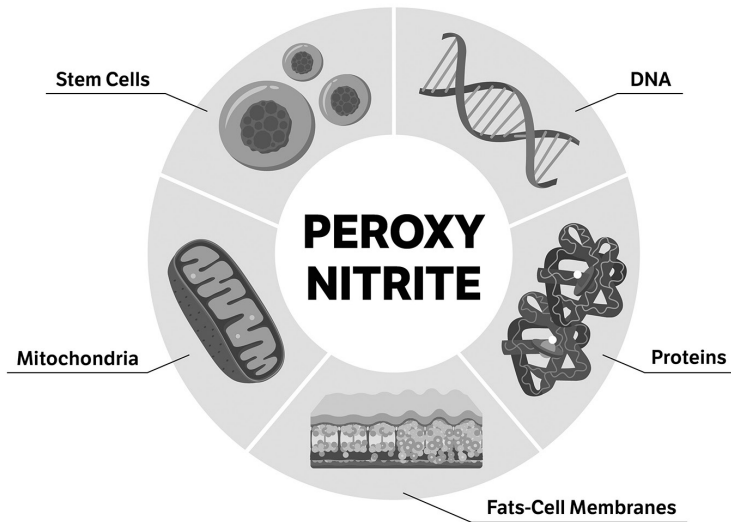


Figure 4.2: The reactive nitrogen species (RNS) damages vital parts of your cells.

While I go into great detail about how to tell if you are burning fat or carbs in *Fat for Fuel*, I'll give you the brief version here. For a general idea of whether you are burning fat or carbs, answer the following questions:

1. Are you overweight? (Is your body mass index higher than 25?)
2. Do you have diabetes?
3. Do you have, or have you had, heart disease?
4. Do you have high blood pressure (130/80 or higher)?
5. Is your waist-to-hip ratio greater than 1 (men) or 0.8 (women)?

To find your waist-to-hip ratio, measure the smallest part of your waist with a tape measure. Don't hold in your belly while you measure! Now measure the biggest part of your hips—the part where you buttocks stick out the most. Divide your waist measurement by your hip measurement. The answer is your waist-to-hip ratio.

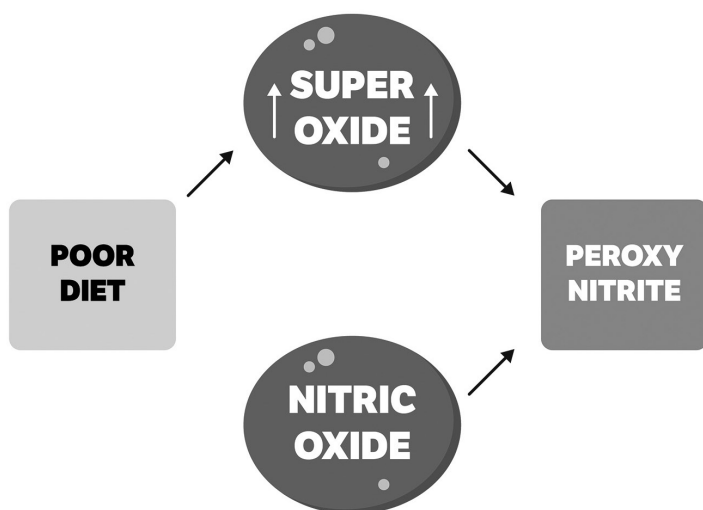


Figure 4.3. How a poor diet increases oxidative stress.

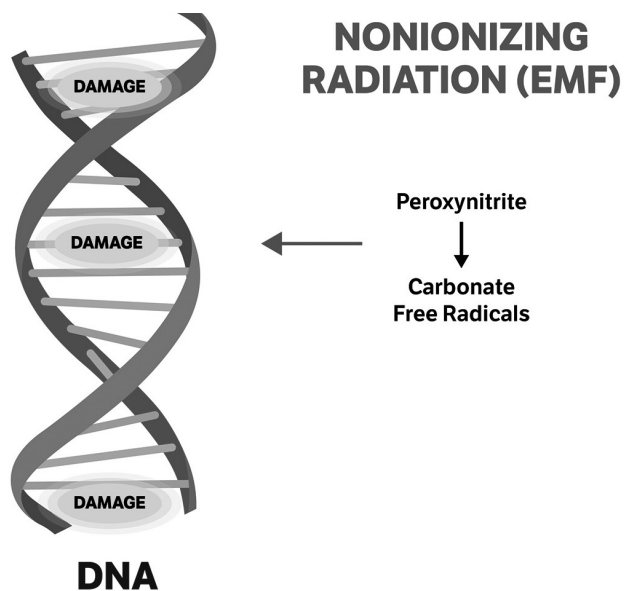


Figure 4.4: How your cell phone and Wi-Fi router damage your DNA.

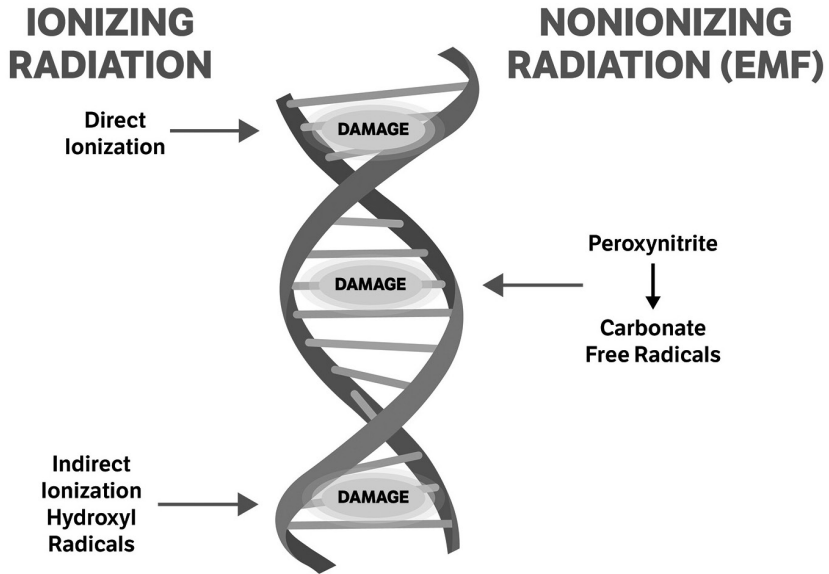


Figure 4.5: Similarities of how X-rays and your cell phone cause DNA damage.

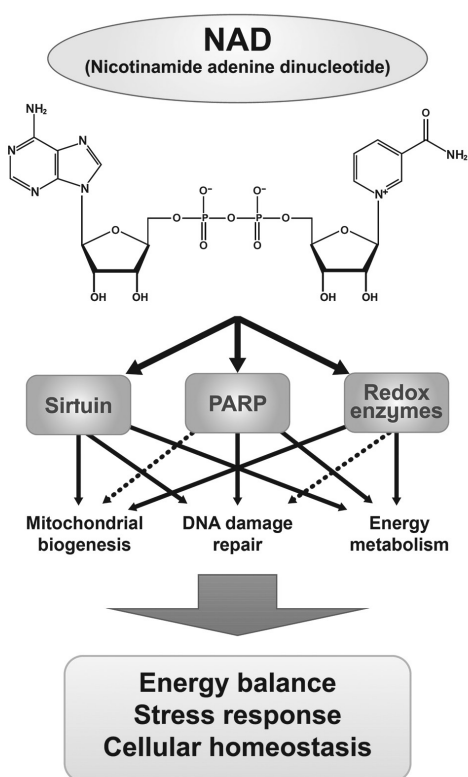


Figure 6.1: Biochemical structure of NAD<sup>+</sup> and some of its important biological functions.



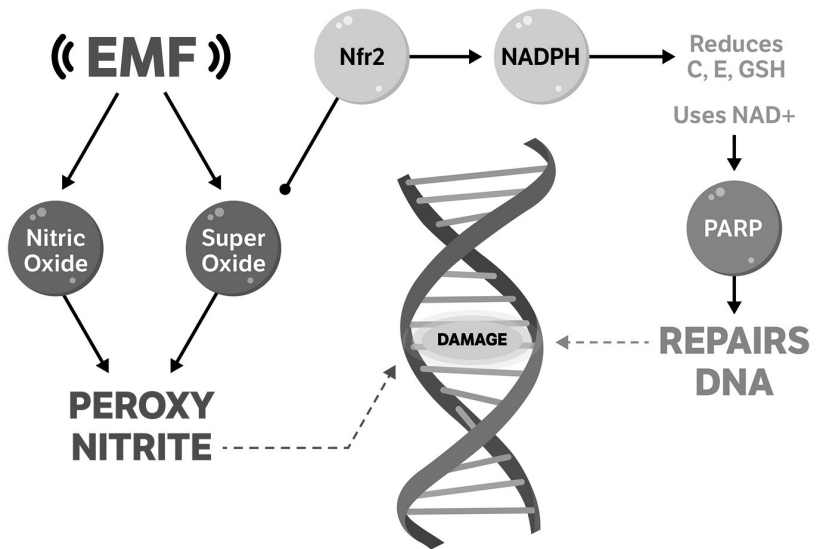


Figure 6.2: The complex ways you can damage and repair your DNA.

The Nrf2-boosting chemicals on the following list are mostly polyphenols.<sup>101–108</sup>

- Vitamin D<sup>109</sup>
- Molecular hydrogen<sup>110–112</sup>
- Sulforaphane<sup>113</sup> from broccoli
- Rutin from apples, black and green tea, and buckwheat<sup>114–116</sup>
- Quercetin, found in capers, red onions, berries, and broccoli<sup>117–120</sup> Curcumin<sup>121–123</sup> from turmeric
- Fisetin, which is found in strawberries, green tea, chamomile tea, and apples<sup>124</sup>
- Resveratrol, found in pistachios, grapes, blueberries, and dark chocolate<sup>125–127</sup>
- Green tea and its active ingredient epigallocatechin-3-gallate (EGCG)<sup>128–130</sup>
- Apple peel polyphenols<sup>131,132</sup>
- Pomegranate peel polyphenols<sup>133–135</sup>
- Delta- and gamma-tocopherols (vitamin E) and tocotrienols (not alpha, which has little activity), from raspberries, blackberries, soybeans (which you should only eat organic versions of to avoid genetically modified organisms), hazelnuts, and olive oil<sup>136–139</sup>
- Purple sweet potatoes<sup>140–142</sup>
- Astaxanthin<sup>143–145</sup> from microalgae and in some seafood, like krill
- Isothiocyanates from broccoli, cabbage, and other cruciferous foods<sup>146,147</sup>
- Triterpenoids and other terpenes, found in beans, apples, peppermint, oregano, and thyme<sup>148,149</sup>

- Sulfur compounds including allyl sulfides in garlic, onion, and allium foods such as chives and leeks<sup>150,151</sup>
- Carotenoids, particularly lycopene, which is found in tomatoes, watermelon, and guava <sup>152,153</sup>
- Fish oil (long-chain omega-3 fatty acids DHA and EPA)<sup>154,155</sup>
- Modest oxidative stress (hormesis), such as that induced by exercise<sup>156</sup>
- Melatonin<sup>157</sup>

**Guidelines for Assessing EMF Readings in Your Home**

Type of EMF Exposure	Maximum Safety Threshold
AC Electric Fields: Field strength with ground potential Field strength, potential-free Body voltage	5 volts per meter 1.5 volts per meter 100 millivolts
AC Magnetic Fields	1 milligauss or 100 nanotesla
RF Radiation	10 microwatts per square meter
Dirty Electricity	Threshold varies depending on meter you use; check manual for guidelines

## Your To-Do List for Reducing Your EMF Exposure

- ☐ **Get a Meter** EMFs are an invisible threat. You can't typically see, hear, or feel them, yet they are able to cause enormous damage. A meter will present visible evidence to you and help you understand the sea of frequencies you are swimming in. There are a number of very good meters out there that I detail in the Resources section. I recommend you purchase an RF and a magnetic meter.
- ☐ **Remove W-Fi from Your Home** While turning off your Wi-Fi at night is a good first step, it is only putting your toe in the water. It is important to create an EMF sanctuary in your home where you can recover from the enormous exposures you will have when out in public, especially with the introduction of 5G. A Wi-Fi router is like having a cell phone tower in your home, and it is simply impossible to create an EMF sanctuary with your Wi-Fi on. This will involve installing Ethernet cables and getting Ethernet adapters for your computers.
- ☐ **Minimize EMFs in Your Bedroom** If you are committed to being healthy, you know that restorative sleep is an absolute essential. It is vital for you to remediate your bedroom as described in Chapter 7, applying the specific strategies discussed to make your bedroom a sanctuary where you can heal and repair.
- ☐ **Bring Back the Cords** Much of your EMF exposure can be reduced by returning to using corded phones at home, corded headsets instead of Bluetooth, and Ethernet cables to connect computers, printers, televisions, and other devices to the Internet.
- ☐ **Take Control of Your Cell Phone** This is one of the most important steps you can take. I encourage you to reread the section that begins on page 186. Keep your cell phone in airplane mode whenever possible and while carrying it on your body. Ideally you will want to conduct as many of your calls as possible through an Internet connection or traditional landline, not wirelessly on your cell phone.

- **Help Your Body Repair the Damage from Exposure to EMFs** Thankfully your body has the capacity to repair this damage. Remember to take your magnesium. Nearly everyone is deficient in this important mineral, and one of its functions is to help block some of the calcium channels that EMFs stimulate.

Keeping your NAD<sup>+</sup> levels optimized is key to your DNA repair, and the older you are the more important this is as NAD<sup>+</sup> levels drop very dramatically as you age. I have provided some background and basic recommendations, but there is an enormous amount of research going on and it is challenging to make solid recommendations at this time.

I plan on offering some breakthrough strategies for NAD<sup>+</sup> replacement that are relatively inexpensive and effective. It is best to subscribe to my newsletter at [mercola.com](http://mercola.com) so you can be informed when they are available.

Until then, the best ways to optimize your NAD<sup>+</sup> levels and remediate the physiological damage triggered by EMFs are:

- Practice daily time restricted eating where you only eat food in a 6- to 8-hour window or even less.
- Engage in some type of daily exercise and seriously consider blood flow restriction training.
- Supplement with molecular hydrogen.
- Make sure you are getting about 25 mg of niacin a day and have regular magnesium supplementation to reach at least your RDA of 400 mg of elemental magnesium.

# RESOURCES

## EMF METERS

The EMF-measuring meters I recommend include:

- **The Acousticom 2.** This RF-only meter is about the size of a deck of cards and very portable as it easily fits into your pocket. I bring it with me when I travel. This meter does not give you a digital display of the actual measurement; it merely blinks LED lights at different levels. But I have found this more than adequate to guide my RF debugging strategies.

The Acousticom 2 is easy to use and has great sensitivity. It measures RF sources between 200 MHz and 8 GHz and emits an audio sound for each wireless source that gets louder as you get closer to the signal. This feature makes the Acousticom 2 very intuitive to understand your RF exposure levels and to locate sources.

The Acousticom 2 displays a graduated progression of lights that indicate the intensity of the RF level in Volts/meter present for the peak value, which is the measurement I recommend you focus on (not the average value).

*Cost: Under \$200.*

- **Safe and Sound Pro.** This RF-only meter is comparable to the Acousticom 2, although it has a larger frequency range, from 200 MHz to 12 GHz, and somewhat more sensitivity than the Acousticom 2 at measuring Wi-Fi and cordless telephones in the 5.8 GHz range (Wi-Fi transmits at both 2.4 and 5.8 GHz). The Safe and Sound Pro can also measure the quick RF micro pulses from smart electric meters.

The Safe and Sound Pro measures peak RF readings in microWatts/meter squared ( $\mu\text{W}/\text{m}^2$ ) at power densities up to 2 million  $\mu\text{W}/\text{m}^2$ . The speaker emits a sound in the presence of wireless EMFs, with a volume control and headphone jack.

*Cost: Under \$400.*

- **Safe and Sound Classic.** This RF-only meter is comparable to the Acousticom 2, although it also has more sensitivity when measuring 5.8 GHz signals. The Classic model has the same RF sensitivity, range and sound capability as its more expensive cousin, the Safe, and Sound Pro.

The primary difference is that the Classic has a row of LEDs without a numeric display to keep the cost down. Use the handy guide to see how many  $\mu\text{W}/\text{m}^2$  each LED setting compares to.

*Cost: Under \$200.*

- **The Cornet ED88T Plus** also measures RF, but because it is a combination EMF meter, it also measures electric fields and magnetic fields. Please understand that its user manual is particularly bad, but thankfully there are great YouTube video manuals to show you how to properly use it.

The single most important feature is its tri-mode functionality. This means it can measure RFs, electric fields, and magnetic fields. It offers good RF mode

functionality with a slightly broader frequency range than the Acousticom 2; it measures down to 100 MHz as opposed to 200 MHz for the Acousticom 2.

One difference between the two meters is that the lowest the Cornet will measure is .0147 volts/meter or .005 microwatts/meter. These are very low, safe readings but you will not be able to measure below them with this meter. The Acousticom 2's lower limit is .01 volts/meter.

Beware, this meter gives a lot of information. For example, it also has a frequency display function (100 MHz to 2.7 GHz), meaning it tells you what the frequency is of the strongest RF source that it is measuring at a particular location. If you want easy "point and play" this meter is not for you, but if you're willing to play around with it, you won't be disappointed. Also includes a USB socket for data logging.

Like the Acousticom 2, the Cornet has an audio function that can help you not only identify the strength of the RF signal but also tell you the device that is transmitting that signal.

Use a headset to best hear the sound. (To access an audio clip that lets you hear the varying sounds that the different microwave sources generate, visit <http://www.slt.co/Education/EMFSounds.aspx>.)

*Cost: Under \$200*

- **The Electromog Indicator ESI-24.** This meter has a triple-axis gauss meter, which means it measures in all three planes and the RF has a sound setting that's a bit louder and more sensitive than the Acousticom 2.

The default setting measures Magnetic, Electric, and RF simultaneously so you can start to understand the difference between the different frequencies right away. There is a higher sensitivity RF setting as well.



This meter does not give you a digital display of the actual measurement. It merely blinks LED lights at different levels, but this is more than adequate to guide EMF debugging strategies.

Convert the magnetic field reading, given in nanotesla (nT), into milligauss by dividing the number of nT by 100 (there are 100 nanoteslas in one milligauss). Then compare that reading with building biology safe levels.

*Cost: \$300*

- **Trifield TF2 Meter.** The older Trifield meters were popular because they did a good job of measuring magnetic fields, but weren't nearly as good on the RF and the electric field measurements. All that's changed with the new Trifield TF2 meter.

Only use the magnetic field nonweighted setting on this meter. Ideal numbers for magnetic fields in homes are below 0.5 milligauss (50 nanotesla) in day-time areas and below 0.3 milligauss (30 nanotesla) in sleeping areas.

Although the new Trifield TF2 has RF measurement capability comparable with the Cornet and Acousticom2, many EMF professionals have found the new Trifield 2 to be inferior when RF and electric fields measure.

This is likely a result of the fact that for electric field setting to be accurate one needs to use the meter only when the body is grounded. All the best meters that measure electric fields are grounded themselves to get a real indication of what the true electric field reading is.

Pay attention to the peak value in the upper left corner on the TF2 when measuring RF. This number holds the highest RF reading measured by the meter

in the previous three seconds. Hold the bottom of the meter when measuring RF to avoid covering the RF antenna inside with your hand.

The Trifield TF2 has similar sensitivity to the Cornet in magnetic field mode but the TF2 trumps the Cornet because it measures magnetic fields in 3-axis (you need to rotate the Cornet to get the best reading).

This means you get the same magnetic field reading at a given location with the TF2, no matter what orientation you hold it in. With a single-axis Gauss meter, on the other hand, like the Cornet ED88T, you have to hold it in all three positions (X, Y, and Z axes) wherever you are measuring to find the highest value. Otherwise, you may miss the true magnetic field reading. (Once you get the hang of using a single-axis Gauss meter, it is just as useful as a three-axis Gauss meter.)

*Cost: Under \$200*

- **ENV RD-10.** The ENV RD-10 offers tri-mode functionality as it can measure three distinct types of EMFs—so it's like having three meters in one. It offers good sensitivity for the price, and compares very well with other more expensive meters (Acousticom2, Cornet ED88TPlus, and Trifield TF2).

The ENV RD-10 offers Windows and Android connectivity for data logging. That means by connecting to a cell phone (on airplane mode) or computer you can get actual readings as opposed to relying on interpreting the LEDs. It has a compact and handy size; it's so small you can almost fit it in your wallet. It is much smaller than any similar meters on the market.

The downside is that the EMF mode selector switch is a bit awkward to use, particular care is required to get on the magnetic field setting and not

confuse it with the other settings. It does not have a digital display to give you an actual reading. Also, it is a single-axis magnetic field meter.

Its size might make you think that it's not a meter you can take seriously. But you can use it as a detector, or by using the USB cable to connect to your cell phone or computer, you can get precise readings, which effectively makes it into an EMF meter.

*Cost: Under \$200.*

- **AlphaLabs UHS2 3-Axis Gaussmeter.** If you want to measure magnetic field EMFs with a very accurate, three-axis Gaussmeter, this is the one to buy. It measures magnetic fields from 13 Hz to 75,000 Hz (75 kHz), which include many dirty electricity frequencies. (Remember, dirty electricity is defined as the electric and magnetic field components of any harmonic frequency above 60 Hz, which is the frequency of AC electricity in North America.)

*Cost: Just over \$300*

- **Dirty Electricity Meters.** There's a tendency for many to overlook measuring dirty electricity. One of the reasons might be because you do need a separate meter to measure this form of EMF. But dirty electricity shouldn't be overlooked. It's certainly not any less harmful than any of the other types of EMF exposures, and for some, it can be the principle source of illness.

Fortunately, it's easy to measure. Dr. Martin Graham and Dave Stetzer, who did some of the earliest research on dirty electricity, devised the Stetzerizer® Microsurge Meter, which you just plug into your wall outlet and it gives you a number in Graham-Stetzer, or GS, units.

According to the manufacturers, the reading should ideally be below 50 GS units. If it's not, you

should seek to eliminate devices that are causing this high reading and/or install filters to reduce your exposure. Greenwave also makes a popular alternative to the Stetzerizer meters. Some people prefer the Greenwave to Stetzerizer and vice versa. This really seems to be a personal thing.

*Cost: Stetzer and Greenwave Microsurge Meters each retail for around \$100.*

**A note about measuring the RF of MMW (millimeter wave) 5G signals:** The band used by true 5G devices, above 20 GHz, will not be measured with any RF meter on this list. Such meters do not yet exist. There are spectrum analyzers that can measure above 20 GHz. They are very expensive and focus on average rather than peak readings, and are not considered sensitive enough by engineers who know about the health effects of 5G for our purposes.

Several companies and engineers are hard at work perfecting an affordable RF detector for frequencies above 20 GHz. I expect that those meters will be on the market shortly after this book is published in 2020.

Remember that some small cell antennas will have 4G transmitters and some will have 5G transmitters, so all of the RF meters mentioned on this list will adequately detect any 4G LTE RF signal from a small cell antenna with a 4G transmitter if you are unfortunate enough to have one go up in your neighborhood. New 5G signals from any updated 4G LTE small cell transmitter below 6 GHz will also be picked up by all RF meters on this list, as most of these meters go up to 8 GHz and even higher.

### Two last tips:

- Each EMF meter is different. For instance, most of the meters mentioned above are single-axis meters, so you would need to orient them in different directions to get the highest reading—read the manufacturer's instructions on how to use them.

- Be methodical when using an EMF meter. Have a notepad on hand where you note your readings in precise locations so you can keep track of them and refer back to them when you take subsequent readings later that day and in a few weeks or months.

### RF and Magnetic Field Conversion Chart

As you can see from the list of recommended meters in this section, there are a wide variety of instruments, and each provides measurements in one specific unit. Use the charts on pages 246 and 247 to convert the measurement used by any meter to the units you are interested in.

## OTHER PRODUCT RECOMMENDATIONS

### Dirty electricity filters

Stetzer and Greenwave each make dirty electricity filters. Sometimes people report feeling unwell after they've installed filters. In order to avoid this possibility for yourself, check your electrical wiring for so-called wiring errors (as I discussed in Chapter 7) before you install these filters.

If you have wiring errors, this could cause your filters to create abnormally high magnetic fields in your house or apartment while they drop the dirty electricity levels. Fortunately, wiring errors can be repaired. Then use your filters without worrying about increasing magnetic fields. (Just don't put them right next to a bed or chair, as filters have a one- to two-foot magnetic field of their own.)

These filters do change the quality of your electricity, so after installing them you should give yourself a couple of weeks to "break them in" before you come to a conclusion about how effective they are.

*Cost: \$25-35 each; they are typically less expensive if purchased in volume.*

## **Whole-house dirty electricity filters**

There are also whole-house dirty electricity-reduction technologies. The one I recommend is the Super Power Perfect Box.

They need to be installed by an electrician at your circuit breaker. You still may need some of the Stetzer or Greenwave filters, but far fewer than you would otherwise require.

*Cost: \$1495, at [shieldedhealing.com](http://shieldedhealing.com)*

## **Shielded power cables and power strips**

You can use shielded power cables to power your electronic devices, and shielded power strips to plug those devices into the wall.

*Cost: From \$7-\$15 for extension and device cords and \$75-\$85 for power strips; all available from [Electrahealth.com](http://Electrahealth.com)*

## **Grounded power cords for laptops**

To insure that your laptop is grounded, get a grounded power cord that plugs into a USB port.

*Cost: \$8.95 at [LessEMF.com](http://LessEMF.com).*

## **Shielded wiring**

Use MpuCord™ to re-wire your lamps, particularly in the bedroom. (I suggest having a licensed electrician do this for you.)

*Cost: \$1.75 a foot, available from [LessEMF.com](http://LessEMF.com).*

## **Ethernet grounding adapter kit**

In order for your Ethernet cable to be grounded (and thus, not producing dirty electricity), you'll need an Ethernet grounding adapter kit.

*Cost: \$29.97 from [Electrahealth.com](http://Electrahealth.com)*

## **Grounded Ethernet-to-USB adapters**

If you need an adapter to plug an Ethernet cable into your computer, that needs to be grounded as well. Thunderbolt-to-Ethernet adapters from Apple are grounded. For the newest MacBooks, you'll need a USB-C-to-Ethernet adapter that is also grounded (the AmazonBasics USB 3.1 Type-C to 3 Port USB Hub is one such model).

*Cost: About \$20*

## **Corded router with no Wi-Fi, or a feature that allows you to turn Wi-Fi off**

The Trendnet 4-Port Broadband Router has no Wi-Fi at all. The Netgear N750 (Model WND4300), N900 (Model WNDR4500), or AC1200 (Model R6230) are routers with switchable Wi-Fi.

## **Corded modem**

The Arris Surfboard is a cable company-approved modem that you can use with a wired router, or a router where you can switch the Wi-Fi off.

*Cost: Ranges from \$49.99 to \$159.99, depending on model*

## **RF-shielding wire mesh box (for covering a router)**

Signal Tamer and the Wave Cage, both available from LessEMF; and Router Guard, available from Smart Meter Guard.

*Cost: \$34.95 (for Signal Tamer), \$12.95 - \$24.95 (for Wave Cage), \$62.95 or \$82.50, depending on size (for Router Guard)*

## **Flicker-free monitors**

Flicker-free monitors from Asus have Eye Care Technology.

*Cost: About \$125, depending on size and retailer*

### **Smart electric, gas, and water meter covers**

Wire mesh covers intended to shield the RFs emitted by smart utility meters can be found at [smartmetercovers.com](http://smartmetercovers.com) and [smartmeterguard.com](http://smartmeterguard.com). [Smartmeterguard.com](http://Smartmeterguard.com) also sells RF-shielding cloth covers for smart gas and water meters.

*Cost: \$59.95 to \$159.95, depending on size needed*

### **Manual plug-in switches**

You can also use manual plug-in switches, called a cube tap with switch, available from online retailers or a local hardware store.

*Cost: \$5–\$10*

### **EMF protective clothing**

My favorite source for clothing that protects your body from EMFs—everything from hats to T-shirts to gloves to full-on burquas—is [LessEMF.com](http://LessEMF.com).

*Cost: Varies depending on item*

### **Shielding paint**

The best shielding paint I have found to date is YShield, which can be purchased at [LessEMF.com](http://LessEMF.com).

*Cost: \$29.95 for a four-ounce can*

### **Dirty electricity filters for solar panel inverters**

Among the photovoltaic inverters that are on the market for solar panel systems, SMA Sunny Boy is designed to keep dirty electricity to a minimum. But even these filters will create dirty electricity.

The capacitor/filter can be purchased from Sager Electronics. The part number for a 5KW inverter (the most common size) is



50FC10. Unfortunately, this is a business to business to company and very consumer unfriendly.

It is a painful process to work with Sager and get the filters so you can have an electrician install them in your inverter(s), but it is the only option I know of. If your inverters are different than 5KW, you will need to talk to their technical staff and give them the part number for the 5KW part and they can recommend the part number you need.

*Cost: Less than \$150 for Sager capacitor/filter*

### **Baby monitors**

Instead of a typical wireless video baby monitor, use a camera and microphone that can be hardwired, such as the D-Link HD Wi-Fi Camera with Remote Viewing, available from online retailers. The Wi-Fi on that camera shuts off when you plug in an Ethernet cable. Verify that with your RF meter.

If you are searching for a new wireless baby monitor with low RF levels, seek out the SmartNOVA Baby Monitor, which emits 97 percent less radiation than standard baby monitors (a newly designed model is under development).

Several other low-RF options are listed on The Gentle Nursery website, at <https://www.gentlenursery.com/natural-baby-registry-guide/low-emission-baby-monitors/>. In Europe, the Nuk-Babyphone is a good option.

### **Radiant heating floor units**

Manufacturers of safer heaters include Schluter Ditra-Heat E-HK, Warmzone ComfortTile, and ThermoTile by Thermosoft. These products have very low magnetic and electric fields because of how they are designed.

## **Dimmer switches**

Lutron and other high-end manufacturers make cleaner dimmer switches than other manufacturers, and central lighting control systems by Lutron, Crestron, and Control4 tend to have clean, expensive dimming modules.

This is done to keep electronic noise out of home theater speaker systems, but they also help keep dirty electricity off electric circuits and plastic AC power cords that you leave plugged in around the house.

## **Infrared saunas**

The lowest and best saunas are near infrared and the best of these are from SaunaSpace (saunaspace.com), which makes a completely EMF-free sauna that is grounded and shielded and uses special full spectrum near infrared bulbs.

# **EDUCATIONAL RESOURCES**

## **For pregnant women or women who plan to become pregnant**

Visit the website [babysafeproject.org](http://babysafeproject.org) for specific guidelines on protecting your baby from EMFs.

## **5g support groups**

- Ban All 5G Technology: <https://petitions.moveon.org/sign/ban-all-5g-technology>
- International Appeal to Stop 5G on Earth and in Space: <https://www.5gspaceappeal.org/>
- Stop Hazardous 5G Small Cell Units from Being Installed: [http://stop5g.whynotnews.eu/?page\\_id=580](http://stop5g.whynotnews.eu/?page_id=580)

- Take Action by Writing, Emailing, or Calling: <http://www.parentsfor safetechnology.org/stop-5g-spectrum-frontiers.html>
- How to File an ADA Accommodations Request for Electrosensitivity to Avoid Small Cells and Wi-Fi:
  - <http://www.electrosmogprevention.org/ada-accommodations-for-rf-exposures/ada-for-es-to-avoid-small-cells-and-wifi/>
  - <http://keepyourpower.org/>
  - <https://www.5gcrisis.com/> (To find a 5G group near you)
- Urging City Council to Halt 5G in Charlotte: <https://www.change.org/p/charlotte-area-residents-urging-city-council-to-halt-5g-in-charlotte>
- Ireland:
  - Galway Public Awareness Meeting on Wireless Technologies and 5G: <https://www.facebook.com/events/2190209274396632/>
  - Dublin Meeting to Stop 5G: <https://www.facebook.com/events/673336026446726/>
- England:
  - 5G Awareness Topsham Event: <https://www.facebook.com/events/444897969609210/>
  - Stop 5G!: <https://www.facebook.com/events/601831420318009/>
  - 5G World 2019 Protest: <https://www.facebook.com/events/341771203144683/>
  - Stop 5G Demonstration: <https://docs.google.com/document/d/1wLFv3wIWDtc9kW81dOAa7j9ejqCQVfO0H2xtXv5zNvA/edit?fbclid=IwAR28cEvFLeJngAcdyqmJCbkt2gdUAJgh2YYeagjBBWHc1K5TPJ5UtuBHjcA>

- Stop the Trial of 5G on the Isles of Scilly and Cornwall: <https://you.38degrees.org.uk/petitions/stop-the-trial-of-5g-on-the-isles-of-scilly-and-cornwall>
- Australia:
  - 5G Rollout in Australia: <https://www.communityrun.org/petitions/5g-roll-out-in-australia>
  - 5G Tower Locations around Australia:
    - [https://tottnews.com/2019/05/16/5g-tower-locations-australia/?fbclid=IwAR2G3fiL1oVthsltKMVc1vM8kGU7e\\_rLpJu4TxM5yXV6xjByUmhmmOata8](https://tottnews.com/2019/05/16/5g-tower-locations-australia/?fbclid=IwAR2G3fiL1oVthsltKMVc1vM8kGU7e_rLpJu4TxM5yXV6xjByUmhmmOata8)
  - No 5G in the Blue Mountains:
    - <https://www.no5gbluemountains.org/what-you-can-do.html>
- New Zealand
  - Petition of Terri Takau: Stop 5G: [https://www.parliament.nz/en/pb/petitions/document/PET\\_87686/petition-of-terri-takau-stop-5g](https://www.parliament.nz/en/pb/petitions/document/PET_87686/petition-of-terri-takau-stop-5g)

MAGNETIC FIELD CONVERSION CHART

Gauss	milliGauss	microGauss	Tesla	milliTesla	microTesla	nanoTesla
0.000,000,01 G	0.000,01 mG	0.01 µG	0.000,000,000,001 T	0.000,000,001 mT	0.000,001 µT	0.001 nT
0.000,000,1 G	0.000,1 mG	0.1 µG	0.000,000,000,01 T	0.000,000,01 mT	0.000,01 µT	0.01 nT
0.000,001 G	0.001 mG	1 µG	0.000,000,000,1 T	0.000,000,1 mT	0.000,1 µT	0.1 nT
0.000,01 G	0.01 mG	10 µG	0.000,000,001 T	0.000,001 mT	0.001 µT	1 nT
0.000,1 G	0.1 mG	100 µG	0.000,000,01 T	0.000,01 mT	0.01 µT	10 nT
0.001 G	1 mG	1,000 µG	0.000,000,1 T	0.000,1 mT	0.1 µT	100 nT
0.01 G	10 mG	10,000 µG	0.000,001 T	0.001 mT	1 µT	1,000 nT
0.1 G	100 mG	100,000 µG	0.000,01 T	0.01 mT	10 µT	10,000 nT
1 G	1,000 mG	1,000,000 µG	0.000,1 T	0.1 mT	100 µT	100,000 nT
10 G	10,000 mG	10,000,000 µG	0.001 T	1 mT	1,000 µT	1,000,000 nT
100 G	100,000 mG	100,000,000 µG	0.01 T	10 mT	10,000 µT	10,000,000 nT

## Radio Frequency "RF" Power Density to Volts Per Meter Unit Conversion Chart

milliVolts Per Meter	Volts Per Meter	Watts/Sq Meter	milliWatts/sq Meter	microWatts/sq Meter	Watts/Sq Centimeter	milliWatts/Sq Centimeter	microWatts/Sq Centimeter
0.00194 mV/m	0.000,00194 V/m	0.000,000,000,000,01 W/m <sup>2</sup>	0.000,000,000,001 mW/m <sup>2</sup>	0.000,000,001 μW/m <sup>2</sup>	0.000,000,000,000,001 W/cm <sup>2</sup>	0.000,000,000,001 mW/cm <sup>2</sup>	0.000,000,000,001 μW/cm <sup>2</sup>
0.00614 mV/m	0.000,00614 V/m	0.000,000,000,000,1 W/m <sup>2</sup>	0.000,000,000,001 mW/m <sup>2</sup>	0.000,000,001 μW/m <sup>2</sup>	0.000,000,000,000,01 W/cm <sup>2</sup>	0.000,000,000,001 mW/cm <sup>2</sup>	0.000,000,000,001 μW/cm <sup>2</sup>
0.0194 mV/m	0.000,0194 V/m	0.000,000,000,001 W/m <sup>2</sup>	0.000,000,001 mW/m <sup>2</sup>	0.000,001 μW/m <sup>2</sup>	0.000,000,000,000,001 W/cm <sup>2</sup>	0.000,000,000,001 mW/cm <sup>2</sup>	0.000,000,000,001 μW/cm <sup>2</sup>
0.0614 mV/m	0.000,0614 V/m	0.000,000,000,001 W/m <sup>2</sup>	0.000,000,001 mW/m <sup>2</sup>	0.000,001 μW/m <sup>2</sup>	0.000,000,000,000,001 W/cm <sup>2</sup>	0.000,000,000,001 mW/cm <sup>2</sup>	0.000,000,000,001 μW/cm <sup>2</sup>
0.194 mV/m	0.000,194 V/m	0.000,000,000,001 W/m <sup>2</sup>	0.000,000,001 mW/m <sup>2</sup>	0.000,001 μW/m <sup>2</sup>	0.000,000,000,000,01 W/cm <sup>2</sup>	0.000,000,000,001 mW/cm <sup>2</sup>	0.000,000,000,001 μW/cm <sup>2</sup>
0.614 mV/m	0.000,614 V/m	0.000,000,001 W/m <sup>2</sup>	0.000,001 mW/m <sup>2</sup>	0.001 μW/m <sup>2</sup>	0.000,000,000,000,01 W/cm <sup>2</sup>	0.000,000,000,001 mW/cm <sup>2</sup>	0.000,000,000,001 μW/cm <sup>2</sup>
1.94 mV/m	0.00194 V/m	0.000,000,001 W/m <sup>2</sup>	0.000,001 mW/m <sup>2</sup>	0.001 μW/m <sup>2</sup>	0.000,000,000,001 W/cm <sup>2</sup>	0.000,000,001 mW/cm <sup>2</sup>	0.000,001 μW/cm <sup>2</sup>
6.14 mV/m	0.00614 V/m	0.000,001 W/m <sup>2</sup>	0.001 mW/m <sup>2</sup>	0.001 μW/m <sup>2</sup>	0.000,000,000,001 W/cm <sup>2</sup>	0.000,000,001 mW/cm <sup>2</sup>	0.000,001 μW/cm <sup>2</sup>
19.4 mV/m	0.0194 V/m	0.000,001 W/m <sup>2</sup>	0.001 mW/m <sup>2</sup>	0.001 μW/m <sup>2</sup>	0.000,000,000,001 W/cm <sup>2</sup>	0.000,000,001 mW/cm <sup>2</sup>	0.000,001 μW/cm <sup>2</sup>
61.4 mV/m	0.0614 V/m	0.000,01 W/m <sup>2</sup>	0.01 mW/m <sup>2</sup>	0.01 μW/m <sup>2</sup>	0.000,000,001 W/cm <sup>2</sup>	0.000,001 mW/cm <sup>2</sup>	0.001 μW/cm <sup>2</sup>
194 mV/m	0.194 V/m	0.000,1 W/m <sup>2</sup>	0.1 mW/m <sup>2</sup>	0.1 μW/m <sup>2</sup>	0.000,000,001 W/cm <sup>2</sup>	0.000,001 mW/cm <sup>2</sup>	0.001 μW/cm <sup>2</sup>
614 mV/m	0.614 V/m	0.001 W/m <sup>2</sup>	1 mW/m <sup>2</sup>	1 μW/m <sup>2</sup>	0.000,000,001 W/cm <sup>2</sup>	0.000,001 mW/cm <sup>2</sup>	0.001 μW/cm <sup>2</sup>
1.942 mV/m	0.001942 V/m	0.000,001 W/m <sup>2</sup>	0.001 mW/m <sup>2</sup>	0.001 μW/m <sup>2</sup>	0.000,000,001 W/cm <sup>2</sup>	0.000,001 mW/cm <sup>2</sup>	0.001 μW/cm <sup>2</sup>
6.140 mV/m	0.006140 V/m	0.01 W/m <sup>2</sup>	10 mW/m <sup>2</sup>	10 μW/m <sup>2</sup>	0.000,001 W/cm <sup>2</sup>	0.001 mW/cm <sup>2</sup>	1 μW/cm <sup>2</sup>
19.416 mV/m	0.019416 V/m	0.1 W/m <sup>2</sup>	100 mW/m <sup>2</sup>	100 μW/m <sup>2</sup>	0.000,01 W/cm <sup>2</sup>	0.001 mW/cm <sup>2</sup>	10 μW/cm <sup>2</sup>
61.400 mV/m	0.061400 V/m	1 W/m <sup>2</sup>	1,000 mW/m <sup>2</sup>	1,000 μW/m <sup>2</sup>	0.000,1 W/cm <sup>2</sup>	0.001 mW/cm <sup>2</sup>	100 μW/cm <sup>2</sup>
194.164 mV/m	0.194164 V/m	10 W/m <sup>2</sup>	10,000 mW/m <sup>2</sup>	10,000 μW/m <sup>2</sup>	0.001 W/cm <sup>2</sup>	1 mW/cm <sup>2</sup>	1,000 μW/cm <sup>2</sup>
614.003 mV/m	0.614003 V/m	100 W/m <sup>2</sup>	100,000 mW/m <sup>2</sup>	100,000 μW/m <sup>2</sup>	0.01 W/cm <sup>2</sup>	10 mW/cm <sup>2</sup>	10,000 μW/cm <sup>2</sup>
1.941,548 mV/m	1.941,548 V/m	1,000 W/m <sup>2</sup>	1,000,000 mW/m <sup>2</sup>	1,000,000 μW/m <sup>2</sup>	0.1 W/cm <sup>2</sup>	100 mW/cm <sup>2</sup>	100,000 μW/cm <sup>2</sup>
6140.032 mV/m	6.140,032 V/m	10,000 W/m <sup>2</sup>	10,000,000 mW/m <sup>2</sup>	10,000,000 μW/m <sup>2</sup>	1 W/cm <sup>2</sup>	1,000 mW/cm <sup>2</sup>	1,000,000 μW/cm <sup>2</sup>

Formulas: V/m = √(W/m<sup>2</sup> x 377) Volts per meter = the square root of the product of Watts per square meter times 377

Note: V/m and mV/m are rounded

# APPENDIX A

## Damaging Effects of Excessive Peroxynitrite

- Damages DNA, and when PARP repairs the damage it reduces cellular NAD<sup>+</sup> stores. Once the level of cellular damage inflicted by peroxynitrite supersedes any possibility of repair, the cell eventually dies via one of the two main pathways of cell demise, necrosis or apoptosis.<sup>1</sup>
- Depletes antioxidant reserves, especially glutathione.<sup>2</sup>
- Creates a self-reinforcing vicious cycle of chronic inflammation.<sup>3</sup>
- Triggers lipid peroxidation in membranes, liposomes, and lipoproteins by abstracting a hydrogen atom from polyunsaturated fatty acids, generating lipid radicals that propagate free radical reactions, thereby degrading membrane lipids and increasing risk of cardiovascular diseases.<sup>4</sup>
- Represents the major species responsible for DNA mutations linking NO overproduction with cancer.<sup>5</sup>
- Exacerbates oxidative damage to mitochondrial proteins.<sup>6</sup>
- Alters protein structure and function.<sup>7</sup>
- Inhibits most components of the mitochondrial electron transport chain, thus decreasing ATP.<sup>8</sup>

- Inhibits superoxide dismutase, thereby preventing the breakdown of locally produced superoxide, which further fuels the formation of peroxynitrite.<sup>9</sup>
- Initiates peroxidation of myelin lipids leading to demyelination and plays a critical role in inflammatory diseases of the nervous system.<sup>10</sup>
- Causes endothelial dysfunction by inactivating prostacyclin synthase (PGI<sub>2</sub> synthase) and limiting endothelial NO production by inactivating eNOS through oxidation of its zinc thiolate center.<sup>11</sup>
- Causes tyrosine nitration in proteins, which is consistently observed in cardiovascular diseases and neurodegeneration.<sup>12</sup>
- PARP-dependent reduction of cellular NAD may also suppress NO formation by depleting endothelial stores of NADPH, an essential cofactor of NOS.<sup>13</sup>
- As one ages, it activates NFκB, a redox-sensitive transcription factor involved in the induction of the transcription of a large range of genes implicated in inflammation, including cytokines (e.g., TNF-α, IL-6, and IL-1β).<sup>14</sup>
- Oxidizes and depletes tetrahydrobiopterin (BH<sub>4</sub>), which is known to produce a partial uncoupling of the NO synthases (eNOS, nNOS and iNOS). When these NOSs are uncoupled, they produce superoxide in place of NO.<sup>15</sup>
- Causes cardiolipin, the inner membrane of the mitochondrion, peroxidation, which leads to lowered activity of some of the enzymes in the electron transport chain and impaired ATP synthesis.<sup>16</sup>
- Inactivates Mn-SOD and makes mitochondria more vulnerable in neurodegeneration.<sup>17</sup>



# APPENDIX B

## Studies That Demonstrate Harmful Effects of EMFs

### **Cellular DNA damage: single strand and double strand breaks in cellular DNA and oxidized bases in cellular DNA, leading to chromosomal and other mutational changes:**

1. Glaser ZR, PhD. "Naval Medical Research Institute Research Report." Bibliography of Reported Biological Phenomena ("Effects") and Clinical Manifestations Attributed to Microwave and Radio-Frequency Radiation. Report No. 2, revised. (June 1971). <https://apps.dtic.mil/dtic/tr/fulltext/u2/750271.pdf>. Accessed September 9, 2017.
2. Goldsmith JR. "Epidemiologic Evidence Relevant to Radar (Microwave) Effects." *Environmental Health Perspectives*. Vol. 105, supplement 6. (December 1997): 1579-1587. doi: 10.1289/ehp.97105s61579.
3. Yakymenko IL, Sidorik EP, Tsybulin AS. "Metabolic Changes in Cells Under Electromagnetic Radiation of Mobile Communication Systems." [Article in Russian] *Ukrainskii Biokhimicheskii Zhurnal* (1999). Vol. 83, no. 2. (March-April 2011): 20-28.
4. Aitken RJ, De Iuliis GN. "Origins and Consequences of DNA Damage in Male Germ Cells." *Reproductive BioMedicine Online*. Vol. 14, no. 6. (June 2007): 727-733. doi: 10.1016/S1472-6483(10)60676-1.
5. Hardell L, Sage C. "Biological Effects from Electromagnetic Field Exposure and Public Exposure Standards." *Biomedicine & Pharmacotherapy*. Vol. 62, no. 2. (February 2008): 104-109. doi: 10.1016/j.biopha.2007.12.004.
6. Hazout A, Menezo Y, Madelenat P, Yazbeck C, Selva J, Cohen-Bacrie P. "Causes and Clinical Implications of Sperm DNA Damages." [Article in French] *Gynécologie Obstétrique & Fertilité*. Vol. 36, no. 11. (November 2008): 1109- 1117. doi: 10.1016/j.gyobfe.2008.07.017.

7. Phillips JL, Singh NP, Lai H. "Electromagnetic Fields and DNA Damage." *Pathophysiology*. Vol. 16, no. 2-3. (August 2009): 79-88. doi: 10.1016/j.pathophys.2008.11.005.
8. Ruediger HW. "Genotoxic Effects of Radiofrequency Electromagnetic Fields." *Pathophysiology*. Vol. 16, no. 2-3. (August 2009): 89-102. doi: 10.1016/j.pathophys.2008.11.004.
9. Makker K, Varghese A, Desai NR, Mouradi R, Agarwal A. "Cell Phones: Modern Man's Nemesis?" *Reproductive BioMedicine Online*. Vol. 18, no 1. (January 2009): 148-157. doi: 10.1016/S1472-6483(10)60437-3.
10. Yakymenko I, Sidorik E. "Risks of Carcinogenesis from Electromagnetic Radiation and Mobile Telephony Devices." *Experimental Oncology*. Vol. 32, no. 2. (June 2010): 54-60.
11. Yakymenko IL, Sidorik EP, Tsybulin AS. "Metabolic Changes in Cells Under Electromagnetic Radiation of Mobile Communication Systems." [Article in Russian] *Ukrainskii Biokhimičeskii Zhurnal* (1999). Vol. 83, no. 2. (March-April 2011): 20-28.
12. Gye MC, Park CJ. "Effect of Electromagnetic Field Exposure on the Reproductive System." *Clinical and Experimental Reproductive Medicine*. Vol. 39, no. 1. (March 2012): 1-9. doi: 10.5653/cerm.2012.39.1.1.
13. Pall ML. "Electromagnetic Fields Act via Activation of Voltage-Gated Calcium Channels to Produce Beneficial or Adverse Effects." *Journal of Cellular and Molecular Medicine*. Vol. 17, no. 8. (August 2013): 958-965. doi: 10.1111/jcmm.12088.
14. Pall ML. "Scientific Evidence Contradicts Findings and Assumptions of Canadian Safety Panel 6: Microwaves Act Through Voltage-Gated Calcium Channel Activation to Induce Biological Impacts at Non-Thermal Levels, Supporting a Paradigm Shift for Microwave/Lower Frequency Electromagnetic Field Action." *Reviews on Environmental Health*. Vol. 30, no. 2. (May 2015): 99-116. doi: 10.1515/reveh-2015-0001.
15. Hensinger P, Wilke E. "Mobilfunk-Studienergebnisse bestätigen Risiken Studienrecherche 2016-4 veröffentlicht." *Umwelt Medizin Gesellschaft*. Vol. 29, no. 3. (2016).
16. Houston BJ, Nixon B, King BV, De Iuliis GN, Aitken RJ. "The Effects of Radiofrequency Electromagnetic Radiation on Sperm Function." *Reproduction*. Vol. 152, no. 6. (December 2016): R263-R276. doi: 10.1530/REP-16-0126.
17. Batista Napotnik T, Reberšek M, Vernier PT, Mali B, Miklavčič D. "Effects of High Voltage Nanosecond Electric Pulses on Eukaryotic Cells (In Vitro): A Systematic Review." *Bioelectrochemistry*. Vol. 110. (August 2016): 1-12. doi: 10.1016/j.bioelechem.2016.02.011.
18. Asghari A, Khaki AA, Rajabzadeh A, Khaki A. "A Review on Electromagnetic Fields (EMFs) and the Reproductive System." *Electronic Physician*. Vol. 8, no. 7. (July 2016): 2655-2662. doi: 10.19082/2655.
19. Pall ML. "Chapter 7: How Cancer Can Be Caused by Microwave Frequency Electromagnetic Field (EMF) Exposures: EMF Activation of Voltage-Gated Calcium Channels (VGCCs) Can Cause Cancer Including Tumor Promotion, Tissue Invasion and Metastasis via 15 Mechanisms." In Markov M (Ed). *Mobile Communications and Public Health* (pp 163-184). New York, CRC Press, 2018.

20. Pall ML. "Wi-Fi Is an Important Threat to Human Health." *Environmental Research*. Vol. 164. (July 2018): 405-416. doi: 10.1016/j.envres.2018.01.035.
21. Wilke I. "Biological and Pathological Effects of 2.45 GHz Radiation on Cells, Fertility, Brain and Behavior." *Umwelt Medizin Gesellschaft*. Vol. 31, supplement 1. (2018): 1-32.

**Lowered fertility, including tissue remodeling changes in the testis, lowered sperm count and sperm quality, lowered female fertility including ovarian remodeling, oocyte (follicle) loss, lowered estrogen, progesterone, and testosterone levels (that is sex hormone levels), increased spontaneous abortion incidence, lowered libido:**

1. Glaser ZR, PhD. "Naval Medical Research Institute Research Report." *Bibliography of Reported Biological Phenomena ("Effects") and Clinical Manifestations Attributed to Microwave and Radio-Frequency Radiation. Report No. 2, revised*. (June 1971). <https://apps.dtic.mil/dtic/tr/fulltext/u2/750271.pdf>. Accessed September 9, 2017.
2. Tolgskaya MS, Gordon ZV. *Pathological Effects of Radio Waves*, translated by B Haigh. New York/London, Consultants Bureau, 1973, 146 pages. doi: 10.1007/978-1-4684-8419-9.
3. Goldsmith JR. "Epidemiologic Evidence Relevant to Radar (Microwave) Effects." *Environmental Health Perspectives*. Vol. 105, supplement 6. (December 1997): 1579-1587. doi: 10.1289/ehp.97105s61579.
4. Aitken RJ, De Iuliis GN. "Origins and Consequences of DNA Damage in Male Germ Cells." *Reproductive BioMedicine Online*. Vol. 14, no. 6. (June 2007): 727-733. doi: 10.1016/S1472-6483(10)60676-1.
5. Hazout A, Menezo Y, Madelenat P, Yazbeck C, Selva J, Cohen-Bacrie P. "Causes and Clinical Implications of Sperm DNA Damages." [Article in French] *Gynécologie Obstétrique & Fertilité*. Vol. 36, no. 11. (November 2008): 1109- 1117. doi: 10.1016/j.gyobfe.2008.07.017.
6. Makker K, Varghese A, Desai NR, Mouradi R, Agarwal A. "Cell Phones: Modern Man's Nemesis?" *Reproductive BioMedicine Online*. Vol. 18, no 1. (January 2009): 148-157. doi: 10.1016/S1472-6483(10)60437-3.
7. Kang N, Shang XJ, Huang YF. "Impact of Cell Phone Radiation on Male Reproduction." [Article in Chinese] *Zhonghua Nan Ke Xue*. Vol. 16, no. 11. (November 2010): 1027-1030.
8. Gye MC, Park CJ. "Effect of Electromagnetic Field Exposure on the Reproductive System." *Clinical and Experimental Reproductive Medicine*. Vol. 39, no. 1. (March 2012): 1-9. doi: 10.5653/cerm.2012.39.1.1.
9. La Vignera S, Condorelli RA, Vicari E, D'Agata R, Calogero AE. "Effects of the Exposure to Mobile Phones on Male Reproduction: A Review of the Literature." *Journal of Andrology*. Vol. 33, no. 3. (May-June 2012): 350-356. doi: 10.2164/jandrol.111.014373.

10. Carpenter DO. "Human Disease Resulting from Exposure to Electromagnetic Fields." *Reviews on Environmental Health*. Vol. 28, no. 4. (2013): 159-172. doi: 10.1515/reveh-2013-0016.
11. Nazıroğlu M, Yüksel M, Köse SA, Özkaya MO. "Recent Reports of Wi-Fi and Mobile Phone-Induced Radiation on Oxidative Stress and Reproductive Signaling Pathways in Females and Males." *The Journal of Membrane Biology*. Vol. 246, no. 12. (December 2013): 869-875. doi: 10.1007/s00232-013-9597-9.
12. Adams JA, Galloway TS, Mondal D, Esteves SC, Mathews F. "Effect of Mobile Telephones on Sperm Quality: A Systematic Review and Meta-Analysis." *Environment International*. Vol. 70. (September 2014): 106-112. doi: 10.1016/j.envint.2014.04.015.
13. Liu K, Li Y, Zhang G, Liu J, Cao J, Ao L, Zhang S. "Association Between Mobile Phone Use and Semen Quality: A Systematic Review and Meta-Analysis." *Andrology*. Vol 2, no. 4. (July 2014): 491-501. doi: 10.1111/j.2047-2927.2014.00205.x.
14. K Sri N. "Mobile Phone Radiation: Physiological & Pathophysiological Considerations." *Indian Journal of Physiology and Pharmacology*. Vol. 59, no. 2. (April 2015): 125-135.
15. Hensinger P, Wilke E. "Mobilfunk-Studienergebnisse bestätigen Risiken Studienrecherche 2016-4 veröffentlicht." *Umwelt Medizin Gesellschaft*. Vol. 29, no. 3. (2016).
16. Houston BJ, Nixon B, King BV, De Iuliis GN, Aitken RJ. "The Effects of Radiofrequency Electromagnetic Radiation on Sperm Function." *Reproduction*. Vol. 152, no. 6. (December 2016): R263-R276. doi: 10.1530/REP-16-0126.
17. Pall ML. "Wi-Fi Is an Important Threat to Human Health." *Environmental Research*. Vol. 164. (July 2018): 405-416. doi: 10.1016/j.envres.2018.01.035.
18. Wilke I. "Biological and Pathological Effects of 2.45 GHz Radiation on Cells, Fertility, Brain and Behavior." *Umwelt Medizin Gesellschaft*. Vol. 31, supplement 1. (2018): 1-32.

## Neurological/neuropsychiatric effects:

1. Marha K. "ATD Report 66-92." *Biological Effects of High-Frequency Electromagnetic Fields (Translation)*. ATD Work Assignment. No. 78, task 11. (July 13, 1966). <http://www.dtic.mil/docs/citations/AD0642029>. Accessed March 12, 2018.
2. Glaser ZR, PhD. "Naval Medical Research Institute Research Report." *Bibliography of Reported Biological Phenomena ("Effects") and Clinical Manifestations Attributed to Microwave and Radio-Frequency Radiation. Report No. 2, revised*. (June 1971). <https://apps.dtic.mil/dtic/tr/fulltext/u2/750271.pdf>. Accessed September 9, 2017.
3. Tolgskaya MS, Gordon ZV. *Pathological Effects of Radio Waves*, translated by B Haigh. New York/London, Consultants Bureau, 1973, 146 pages. doi: 10.1007/978-1-4684-8419-9.

4. Bise W. "Low Power Radio-Frequency and Microwave Effects on Human Electroencephalogram and Behavior." *Physiological Chemistry and Physics*. Vol. 10, no. 5. (1978): 387-398.
5. Raines, JK. "National Aeronautics and Space Administration Report." *Electromagnetic Field Interactions with the Human Body: Observed Effects and Theories*. (April 1981): 116 pages.
6. Frey AH. "Electromagnetic Field Interactions with Biological Systems." *The FASEB Journal*. Vol. 7, no. 2. (February 1, 1993): 272-281. doi: 10.1096/fasebj.7.2.8440406.
7. Lai H. "Neurological Effects of Radiofrequency Electromagnetic Radiation." In JC Lin (Ed). *Advances in Electromagnetic Fields in Living Systems, Vol. 1* (pp 27-88). New York, Plenum Press, 1994.
8. Grigor'ev IuG. "Role of Modulation in Biological Effects of Electromagnetic Radiation." [Article in Russian] *Radiatsionnaia Biologiya Radioecologiya*. Vol. 36, no. 5. (September-October 1996): 659-670.
9. Lai, H. "Mobile Phone and Health Symposium Workshop Paper." *Neurological Effects of Radiofrequency Electromagnetic Radiation*. (1998). [http://www.mapcruzin.com/radiofrequency/henry\\_lai2.htm](http://www.mapcruzin.com/radiofrequency/henry_lai2.htm).
10. Aitken RJ, De Iuliis GN. "Origins and Consequences of DNA Damage in Male Germ Cells." *Reproductive BioMedicine Online*. Vol. 14, no. 6. (June 2007): 727-733. doi: 10.1016/S1472-6483(10)60676-1.
11. Hardell L, Sage C. "Biological Effects from Electromagnetic Field Exposure and Public Exposure Standards." *Biomedicine & Pharmacotherapy*. Vol. 62, no. 2. (February 2008): 104-109. doi: 10.1016/j.biopha.2007.12.004.
12. Makker K, Varghese A, Desai NR, Mouradi R, Agarwal A. "Cell Phones: Modern Man's Nemesis?" *Reproductive BioMedicine Online*. Vol. 18, no 1. (January 2009): 148-157. doi: 10.1016/S1472-6483(10)60437-3.
13. Khurana VG, Hardell L, Everaert J, Bortkiewicz A, Carlberg M, Ahonen M. "Epidemiological Evidence for a Health Risk from Mobile Phone Base Stations." *International Journal of Occupational and Environmental Health*. Vol. 16, no. 3. (July-September 2010): 263-267. doi: 10.1179/107735210799160192.
14. Levitt BB, Lai H. "Biological Effects from Exposure to Electromagnetic Radiation Emitted by Cell Tower Base Stations and Other Antenna Arrays." *Environmental Reviews*. Vol. 18, no. 1. (2010): 369-395. doi.org/10.1139/A10-018.
15. Carpenter DO. "Human Disease Resulting from Exposure to Electromagnetic Fields." *Reviews on Environmental Health*. Vol. 28, no. 4. (2013): 159-172. doi: 10.1515/reveh-2013-0016.
16. Politański P, Bortkiewicz A, Zmysłony M. "Effects of Radio- and Microwaves Emitted by Wireless Communication Devices on the Functions of the Nervous System Selected Elements." [Article in Polish] *Medycyna Pracy*. Vol. 67, no. 3. (2016): 411-421. doi: 10.13075/mp.5893.00343.
17. Hensinger P, Wilke E. "Mobilfunk-Studienergebnisse bestätigen Risiken Studienrecherche 2016-4 veröffentlicht." *Umwelt Medizin Gesellschaft*. Vol. 29, no. 3. (2016).

18. Pall ML. "Microwave Frequency Electromagnetic Fields (EMFs) Produce Widespread Neuropsychiatric Effects Including Depression." *Journal of Chemical Neuroanatomy*. Vol. 75, part B. (September 2016): 43-51. doi:10.1016/j.jchemneu.2015.08.001.
19. Hecht, K. "Brochure 6: Brochure Series of the Competence Initiative for the Protection of Humanity, the Environment and Democracy." *Health Implications of Long-Term Exposures to Electrosmog*. (2016). [http://kompetenzinitiative.net/KIT/wp-content/uploads/2016/07/KI\\_Brochure-6\\_K\\_Hecht\\_web.pdf](http://kompetenzinitiative.net/KIT/wp-content/uploads/2016/07/KI_Brochure-6_K_Hecht_web.pdf). Accessed February 11, 2018.
20. Sangün Ö, Dündar B, Çömlekçi S, Büyükgebiz A. "The Effects of Electromagnetic Field on the Endocrine System in Children and Adolescents." *Pediatric Endocrinology Reviews*. Vol. 13, no. 2. (December 2015): 531-545.
21. Belyaev I, Dean A, Eger H, Hubmann G, Jandrisovits R, Kern M, Kundi M, Moshhammer H, Lercher P, Müller K, Oberfeld G, Ohnsorge P, Pelzmann P, Scheingraber C, Thill R. "EUROPAEM EMF Guideline 2016 for the Prevention, Diagnosis and Treatment of EMF-Related Health Problems and Illnesses." *Reviews on Environmental Health*. Vol. 31, no. 3. (September 2016): 363-397. doi: 10.1515/reveh-2016-0011.
22. Zhang J, Sumich A, Wang GY. "Acute Effects of Radiofrequency Electromagnetic Field Emitted by Mobile Phone on Brain Function." *Bioelectromagnetics*. Vol. 38, no 5. (July 2017): 329-338. doi: 10.1002/bem.22052.
23. Lai H. "Chapter 8: A Summary of Recent Literature (2007–2017) on Neurological Effects of Radio Frequency Radiation." In Markov M (Ed). *Mobile Communications and Public Health* (pp 185-220). New York, CRC Press, 2018.
24. Pall ML. "Wi-Fi Is an Important Threat to Human Health." *Environmental Research*. Vol. 164. (July 2018): 405-416. doi: 10.1016/j.envres.2018.01.035.
25. Wilke I. "Biological and Pathological Effects of 2.45 GHz Radiation on Cells, Fertility, Brain and Behavior." *Umwelt Medizin Gesellschaft*. Vol. 31, supplement 1. (2018): 1-32.

**Apoptosis/cell death (an important process in production of neurodegenerative diseases that is also important in producing infertility responses):**

1. Glaser ZR, PhD. "Naval Medical Research Institute Research Report." Bibliography of Reported Biological Phenomena ("Effects") and Clinical Manifestations Attributed to Microwave and Radio-Frequency Radiation. Report No. 2, revised. (June 1971). <https://apps.dtic.mil/dtic/tr/fulltext/u2/750271.pdf>. Accessed September 9, 2017.
2. Tolgskaya MS, Gordon ZV. Pathological Effects of Radio Waves, translated by B Haigh. New York/London, Consultants Bureau, 1973, 146 pages. doi: 10.1007/978-1-4684-8419-9.
3. Raines, JK. "National Aeronautics and Space Administration Report." *Electromagnetic Field Interactions with the Human Body: Observed Effects and Theories*. (April 1981): 116 pages.

4. Hardell L, Sage C. "Biological Effects from Electromagnetic Field Exposure and Public Exposure Standards." *Biomedicine & Pharmacotherapy*. Vol. 62, no. 2. (February 2008): 104-109. doi: 10.1016/j.biopha.2007.12.004.
5. Makker K, Varghese A, Desai NR, Mouradi R, Agarwal A. "Cell Phones: Modern Man's Nemesis?" *Reproductive BioMedicine Online*. Vol. 18, no 1. (January 2009): 148-157. doi: 10.1016/S1472-6483(10)60437-3.
6. Levitt BB, Lai H. "Biological Effects from Exposure to Electromagnetic Radiation Emitted by Cell Tower Base Stations and Other Antenna Arrays." *Environmental Reviews*. Vol. 18, no. 1. (2010): 369-395. doi.org/10.1139/A10-018.
7. Yakymenko I, Sidorik E. "Risks of Carcinogenesis from Electromagnetic Radiation and Mobile Telephony Devices." *Experimental Oncology*. Vol. 32, no. 2. (June 2010): 54-60.
8. Yakymenko IL, Sidorik EP, Tsybulin AS. "Metabolic Changes in Cells Under Electromagnetic Radiation of Mobile Communication Systems." [Article in Russian] *Ukrainskii Biokhimičeskii Zhurnal* (1999). Vol 83, no. 2. (March-April 2011): 20-28.
9. Pall ML. "Electromagnetic Fields Act via Activation of Voltage-Gated Calcium Channels to Produce Beneficial or Adverse Effects." *Journal of Cellular and Molecular Medicine*. Vol. 17, no. 8. (August 2013): 958-965. doi: 10.1111/jcmm.12088.
10. Pall ML. "Microwave Frequency Electromagnetic Fields (EMFs) Produce Widespread Neuropsychiatric Effects Including Depression." *Journal of Chemical Neuroanatomy*. Vol. 75, part B. (September 2016): 43-51. doi:10.1016/j.jchemneu.2015.08.001.
11. Batista Napotnik T, Reberšek M, Vernier PT, Mali B, Miklavčič D. "Effects of High Voltage Nanosecond Electric Pulses on Eukaryotic Cells (In Vitro): A Systematic Review." *Bioelectrochemistry*. Vol. 110. (August 2016): 1-12. doi: 10.1016/j.bioelechem.2016.02.011.
12. Asghari A, Khaki AA, Rajabzadeh A, Khaki A. "A Review on Electromagnetic Fields (EMFs) and the Reproductive System." *Electronic Physician*. Vol. 8, no. 7. (July 2016): 2655-2662. doi: 10.19082/2655.
13. Pall ML. "Wi-Fi Is an Important Threat to Human Health." *Environmental Research*. Vol. 164. (July 2018): 405-416. doi: 10.1016/j.envres.2018.01.035.

**Oxidative stress/free radical damage (important mechanisms involved in almost all chronic diseases; direct cause of cellular DNA damage):**

1. Raines, JK. "National Aeronautics and Space Administration Report." *Electromagnetic Field Interactions with the Human Body: Observed Effects and Theories*. (April 1981): 116 pages.
2. Hardell L, Sage C. "Biological Effects from Electromagnetic Field Exposure and Public Exposure Standards." *Biomedicine & Pharmacotherapy*. Vol. 62, no. 2. (February 2008): 104-109. doi: 10.1016/j.biopha.2007.12.004.

3. Hazout A, Menezo Y, Madelenat P, Yazbeck C, Selva J, Cohen-Bacrie P. "Causes and Clinical Implications of Sperm DNA Damages." [Article in French] *Gynécologie Obstétrique & Fertilité*. Vol. 36, no. 11. (November 2008): 1109- 1117. doi: 10.1016/j.gyobfe.2008.07.017.
4. Makker K, Varghese A, Desai NR, Mouradi R, Agarwal A. "Cell Phones: Modern Man's Nemesis?" *Reproductive BioMedicine Online*. Vol. 18, no 1. (January 2009): 148-157. doi: 10.1016/S1472-6483(10)60437-3.
5. Desai NR, Kesari KK, Agarwal A. "Pathophysiology of Cell Phone Radiation: Oxidative Stress and Carcinogenesis with Focus on Male Reproductive System." *Reproductive Biology and Endocrinology*. Vol. 7. (October 22, 2009): 114. doi: 10.1186/1477-7827-7-114.
6. Yakymenko I, Sidorik E. "Risks of Carcinogenesis from Electromagnetic Radiation and Mobile Telephony Devices." *Experimental Oncology*. Vol. 32, no. 2. (June 2010): 54-60.
7. Yakymenko IL, Sidorik EP, Tsybulin AS. "Metabolic Changes in Cells Under Electromagnetic Radiation of Mobile Communication Systems." [Article in Russian] *Ukrainskii Biokhimicheskii Zhurnal* (1999). Vol 83, no. 2. (March-April 2011): 20-28.
8. Consales C, Merla C, Marino C, Benassi B. "Electromagnetic Fields, Oxidative Stress, and Neurodegeneration." *International Journal of Cell Biology*. Vol. 2012. (2012): 683897. doi: 10.1155/2012/683897.
9. La Vignera S, Condorelli RA, Vicari E, D'Agata R, Calogero AE. "Effects of the Exposure to Mobile Phones on Male Reproduction: A Review of the Literature." *Journal of Andrology*. Vol. 33, no. 3. (May-June 2012): 350-356. doi: 10.2164/jandrol.111.014373.
10. Pall ML. "Electromagnetic Fields Act via Activation of Voltage-Gated Calcium Channels to Produce Beneficial or Adverse Effects." *Journal of Cellular and Molecular Medicine*. Vol. 17, no. 8. (August 2013): 958-965. doi: 10.1111/jcmm.12088.
11. Nazıroğlu M, Yüksel M, Köse SA, Özkaya MO. "Recent Reports of Wi-Fi and Mobile Phone-Induced Radiation on Oxidative Stress and Reproductive Signaling Pathways in Females and Males." *The Journal of Membrane Biology*. Vol. 246, no. 12. (December 2013): 869-875. doi: 10.1007/s00232-013-9597-9.
12. Pall ML. "Scientific Evidence Contradicts Findings and Assumptions of Canadian Safety Panel 6: Microwaves Act Through Voltage-Gated Calcium Channel Activation to Induce Biological Impacts at Non-Thermal Levels, Supporting a Paradigm Shift for Microwave/Lower Frequency Electromagnetic Field Action." *Reviews on Environmental Health*. Vol. 30, no. 2. (May 2015): 99-116. doi: 10.1515/reveh-2015-0001.
13. Yakymenko I, Tsybulin O, Sidorik E, Henshel D, Kyrlyenko O, Kysylenko S. "Oxidative Mechanisms of Biological Activity of Low-Intensity Radiofrequency Radiation." *Electromagnetic Biology and Medicine*. Vol. 35, no. 2. (2016): 186-202. doi: 10.3109/15368378.2015.1043557.
14. Hensinger P, Wilke E. "Mobilfunk-Studienergebnisse bestätigen Risiken Studienrecherche 2016-4 veröffentlicht." *Umwelt Medizin Gesellschaft*. Vol. 29, no. 3. (2016).



15. Houston BJ, Nixon B, King BV, De Iuliis GN, Aitken RJ. "The Effects of Radiofrequency Electromagnetic Radiation on Sperm Function." *Reproduction*. Vol. 152, no. 6. (December 2016): R263-R276. doi: 10.1530/REP-16-0126.
16. Dasdag S, Akdag MZ. "The Link Between Radiofrequencies Emitted from Wireless Technologies and Oxidative Stress." *Journal of Chemical Neuroanatomy*. Vol. 75, part B. (September 2016): 85-93. doi: 10.1016/j.jchemneu.2015.09.001.
17. Wang H, Zhang X. "Magnetic Fields and Reactive Oxygen Species." *International Journal of Molecular Sciences*. Vol. 18, no. 10. (October 2017): 2175. doi: 10.3390/ijms18102175.
18. Pall ML. "Wi-Fi Is an Important Threat to Human Health." *Environmental Research*. Vol. 164. (July 2018): 405-416. doi: 10.1016/j.envres.2018.01.035.
19. Wilke I. "Biological and Pathological Effects of 2.45 GHz Radiation on Cells, Fertility, Brain and Behavior." *Umwelt Medizin Gesellschaft*. Vol. 31, supplement 1. (2018): 1-32.

### Endocrine/hormonal effects:

1. Glaser ZR, PhD. "Naval Medical Research Institute Research Report." Bibliography of Reported Biological Phenomena ("Effects") and Clinical Manifestations Attributed to Microwave and Radio-Frequency Radiation. Report No. 2, revised. (June 1971). <https://apps.dtic.mil/dtic/tr/fulltext/u2/750271.pdf>. Accessed September 9, 2017.
2. Tolgskaya MS, Gordon ZV. *Pathological Effects of Radio Waves*, translated by B Haigh. New York/London, Consultants Bureau, 1973, 146 pages. doi: 10.1007/978-1-4684-8419-9.
3. Raines, JK. "National Aeronautics and Space Administration Report." *Electromagnetic Field Interactions with the Human Body: Observed Effects and Theories*. (April 1981): 116 pages.
4. Hardell L, Sage C. "Biological Effects from Electromagnetic Field Exposure and Public Exposure Standards." *Biomedicine & Pharmacotherapy*. Vol. 62, no. 2. (February 2008): 104-109. doi: 10.1016/j.biopha.2007.12.004.
5. Makker K, Varghese A, Desai NR, Mouradi R, Agarwal A. "Cell Phones: Modern Man's Nemesis?" *Reproductive BioMedicine Online*. Vol. 18, no 1. (January 2009): 148-157. doi: 10.1016/S1472-6483(10)60437-3.
6. Gye MC, Park CJ. "Effect of Electromagnetic Field Exposure on the Reproductive System." *Clinical and Experimental Reproductive Medicine*. Vol. 39, no. 1. (March 2012): 1-9. doi: 10.5653/cerm.2012.39.1.1.
7. Pall ML. "Scientific Evidence Contradicts Findings and Assumptions of Canadian Safety Panel 6: Microwaves Act Through Voltage-Gated Calcium Channel Activation to Induce Biological Impacts at Non-Thermal Levels, Supporting a Paradigm Shift for Microwave/Lower Frequency Electromagnetic Field Action." *Reviews on Environmental Health*. Vol. 30, no. 2. (May 2015): 99-116. doi: 10.1515/reveh-2015-0001.

8. Sangün Ö, Dündar B, Çömlekçi S, Büyükgebiz A. "The Effects of Electromagnetic Field on the Endocrine System in Children and Adolescents." *Pediatric Endocrinology Reviews*. Vol. 13, no. 2. (December 2015): 531-545.
9. Hecht, K. "Brochure 6: Brochure Series of the Competence Initiative for the Protection of Humanity, the Environment and Democracy." *Health Implications of Long-Term Exposures to Electromog*. (2016). [http://kompetenzinitiative.net/KIT/wp-content/uploads/2016/07/KI\\_Brochure -6\\_K\\_Hecht\\_web.pdf](http://kompetenzinitiative.net/KIT/wp-content/uploads/2016/07/KI_Brochure -6_K_Hecht_web.pdf). Accessed February 11, 2018.
10. Asghari A, Khaki AA, Rajabzadeh A, Khaki A. "A Review on Electromagnetic Fields (EMFs) and the Reproductive System." *Electronic Physician*. Vol. 8, no. 7. (July 2016): 2655-2662. doi: 10.19082/2655.
11. Pall ML. "Wi-Fi Is an Important Threat to Human Health." *Environmental Research*. Vol. 164. (July 2018): 405-416. doi: 10.1016/j.envres.2018.01.035.
12. Wilke I. "Biological and Pathological Effects of 2.45 GHz Radiation on Cells, Fertility, Brain and Behavior." *Umwelt Medizin Gesellschaft*. Vol. 31, supplement 1. (2018): 1-32.

**Increased intracellular calcium: intracellular calcium is maintained at very low levels (typically about  $2 \times 10^{-9}$  M) except for brief increases used to produce regulatory responses, such that sustained elevation of intracellular calcium levels produces many pathophysiological (that is disease-causing) responses):**

1. Adey WR. "Cell Membranes: The Electromagnetic Environment and Cancer Promotion." *Neurochemical Research*. Vol. 13, no. 7. (July 1988): 671-677. doi: 10.1007/bf00973286.
2. Walleczek, J. "Electromagnetic Field Effects on Cells of the Immune System: The Role of Calcium Signaling." *The FASEB Journal*. Vol. 6, no. 13. (October 1992): 3177-3185. doi: 10.1096/fasebj.6.13.1397839.
3. Adey, WR. "Biological Effects of Electromagnetic Fields." *Journal of Cellular Biochemistry*. Vol. 51, no. 4. (April 1993): 410-416.
4. Frey AH. "Electromagnetic Field Interactions with Biological Systems." *The FASEB Journal*. Vol. 7, no. 2. (February 1, 1993): 272-281. doi: 10.1096/fasebj.7.2.8440406.
5. Funk RHW, Monsees T, Özkücur N. "Electromagnetic Effects—From Cell Biology to Medicine." *Progress in Histochemistry and Cytochemistry*. Vol. 43, no. 4. (2009): 177-264. doi: 10.1016/j.proghi.2008.07.001.
6. Yakymenko IL, Sidorik EP, Tsybulin AS. "Metabolic Changes in Cells Under Electromagnetic Radiation of Mobile Communication Systems." [Article in Russian] *Ukrainskii Biokhimicheskii Zhurnal* (1999). Vol 83, no. 2. (March-April 2011): 20-28.

7. Gye MC, Park CJ. "Effect of Electromagnetic Field Exposure on the Reproductive System." *Clinical and Experimental Reproductive Medicine*. Vol. 39, no. 1. (March 2012): 1-9. doi: 10.5653/cerm.2012.39.1.1.
8. Pall ML. "Electromagnetic Fields Act via Activation of Voltage-Gated Calcium Channels to Produce Beneficial or Adverse Effects." *Journal of Cellular and Molecular Medicine*. Vol. 17, no. 8. (August 2013): 958-965. doi: 10.1111/jcmm.12088.
9. Pall ML. "Electromagnetic Field Activation of Voltage-Gated Calcium Channels: Role in Therapeutic Effects." *Electromagnetic Biology and Medicine*. Vol. 33, no. 4. (December 2014): 251. doi: 10.3109/15368378.2014.906447.
10. Pall ML. "How to Approach the Challenge of Minimizing Non-Thermal Health Effects of Microwave Radiation from Electrical Devices." *International Journal of Innovative Research in Engineering & Management*. Vol. 2, no. 5. (September 2015): 71-76.
11. Pall ML. "Scientific Evidence Contradicts Findings and Assumptions of Canadian Safety Panel 6: Microwaves Act Through Voltage-Gated Calcium Channel Activation to Induce Biological Impacts at Non-Thermal Levels, Supporting a Paradigm Shift for Microwave/Lower Frequency Electromagnetic Field Action." *Reviews on Environmental Health*. Vol. 30, no. 2. (May 2015): 99-116. doi: 10.1515/reveh-2015-0001.
12. Pall ML. "Electromagnetic Fields Act Similarly in Plants as in Animals: Probable Activation of Calcium Channels via Their Voltage Sensor." *Current Chemical Biology*. Vol. 10, no. 1. (July 2016): 74-82. doi: 10.2174/2212796810666160419160433.
13. Pall ML. "Microwave Frequency Electromagnetic Fields (EMFs) Produce Widespread Neuropsychiatric Effects Including Depression." *Journal of Chemical Neuroanatomy*. Vol. 75, part B. (September 2016): 43-51. doi:10.1016/j.jchemneu.2015.08.001.
14. Batista Napotnik T, Reberšek M, Vernier PT, Mali B, Miklavčič D. "Effects of High Voltage Nanosecond Electric Pulses on Eukaryotic Cells (In Vitro): A Systematic Review." *Bioelectrochemistry*. Vol. 110. (August 2016): 1-12. doi: 10.1016/j.bioelechem.2016.02.011.
15. Asghari A, Khaki AA, Rajabzadeh A, Khaki A. "A Review on Electromagnetic Fields (EMFs) and the Reproductive System." *Electronic Physician*. Vol. 8, no. 7. (July 2016): 2655-2662. doi: 10.19082/2655.

**Pulsed EMFs are, in most cases, much more biologically active than are non-pulsed EMFs. This is important because all wireless communication devices communicate via pulsations, and the "smarter" the devices are, the more they pulse, because the pulsations convey the information. What should be obvious is that you could not study such pulsation roles if there were no biological effects produced by such EMFs. The pulsation studies alone tell us that there are many such EMF effects:**

1. Osipov YuA. Labor Hygiene and the Effect of Radiofrequency Electromagnetic Fields on Workers. Leningrad Meditsina Publishing House, 1965, 220 pages.
2. Pollack H, Healer J. "Review of Information on Hazards to Personnel from High-Frequency Electromagnetic Radiation. Institute for Defense Analyses; Research and Engineering Support Division." IDA/HQ 67-6211, Series B, May 1967.
3. Frey AH. "Differential Biologic Effects of Pulsed and Continuous Electromagnetic Fields and Mechanisms of Effect." *Annals of the New York Academy of Sciences*. Vol. 238. (1974): 273-279. doi: 10.1111/j.1749-6632.1974.tb26796.x.
4. Creighton MO, Larsen LE, Stewart-DeHaan PJ, Jacobi JH, Sanwal M, Baskerville JC, Bassen HE, Brown DO, Trevithick JR. "In Vitro Studies of Microwave-Induced Cataract. II. Comparison of Damage Observed for Continuous Wave and Pulsed Microwaves." *Experimental Eye Research*. Vol. 45, no. 3. (1987): 357-373. doi: 10.1016/s0014-4835(87)80123-9.
5. Grigor'ev IuG. "Role of Modulation in Biological Effects of Electromagnetic Radiation." [Article in Russian] *Radiatsionnaia Biologiya Radioecologiya*. Vol. 36, no. 5. (September-October 1996): 659-670.
6. Belyaev I. "Non-Thermal Biological Effects of Microwaves." *Microwave Review*. Vol. 11, no. 2. (November 2005): 13-29.
7. Belyaev I. "Non-Thermal Biological Effects of Microwaves: Current Knowledge, Further Perspective and Urgent Needs." *Electromagnetic Biology and Medicine*. Vol. 24, no. 3. (2005): 375-403. doi.org/10.1080/15368370500381844.
8. Markov MS. "Pulsed Electromagnetic Field Therapy: History, State of the Art and Future." *The Environmentalist*. Vol. 27, no. 4. (December 2007): 465-475. doi: 10.1007/s10669-007-9128-2.
9. Van Boxem K, Huntoon M, Van Zundert J, Patijn J, van Kleef M, Joosten EA. "Pulsed Radiofrequency: A Review of the Basic Science as Applied to the Pathophysiology of Radicular Pain: A Call for Clinical Translation." *Regional Anesthesia & Pain Medicine*. Vol. 39, no. 2. (March-April 2014): 149-159. doi: 10.1097/AAP.0000000000000063.
10. Belyaev, I. "Biophysical Mechanisms for Nonthermal Microwave Effects." In Markov M (Ed). *Electromagnetic Fields in Biology and Medicine* (pp 49-67). New York, CRC Press, 2015.
11. Pall ML. "Scientific Evidence Contradicts Findings and Assumptions of Canadian Safety Panel 6: Microwaves Act Through Voltage-Gated Calcium Channel Activation to Induce Biological Impacts at Non-Thermal Levels, Supporting a Paradigm Shift for Microwave/Lower Frequency Electromagnetic Field Action." *Reviews on Environmental Health*. Vol. 30, no. 2. (May 2015): 99-116. doi: 10.1515/reveh-2015-0001.
12. Panagopoulos DJ, Johansson O, Carlo GL. "Real Versus Simulated Mobile Phone Exposures in Experimental Studies." *BioMed Research International*. Vol. 2015, no. 4. (2015): 607053. doi: 10.1155/2015/607053.
13. Batista Napotnik T, Reberšek M, Vernier PT, Mali B, Miklavčič D. "Effects of High Voltage Nanosecond Electric Pulses on Eukaryotic Cells (In Vitro): A Systematic Review." *Bioelectrochemistry*. Vol. 110. (August 2016): 1-12. doi: 10.1016/j.bioelechem.2016.02.011.

## Cancer causation by EMF exposures:

1. Dwyer MJ, Leeper DB. "DHEW Publication (NIOSH)." *A Current Literature Report on the Carcinogenic Properties of Ionizing and Nonionizing Radiation*. No. 78-134. (March 1978).
2. Marino AA, Morris DH. "Chronic Electromagnetic Stressors in the Environment. A Risk Factor in Human Cancer." *Journal of Environmental Science and Health. Part C: Environmental Carcinogenesis Reviews*. Vol. 3, no. 2. (1985): 189-219. doi.org/10.1080/10590508509373333.
3. Adey WR. "Cell Membranes: The Electromagnetic Environment and Cancer Promotion." *Neurochemical Research*. Vol. 13, no. 7. (July 1988): 671-677. doi: 10.1007/bf00973286.
4. Adey WR. "Joint Actions of Environmental Nonionizing Electromagnetic Fields and Chemical Pollution in Cancer Promotion." *Environmental Health Perspectives*. Vol. 86. (June 1990): 297-305. doi: 10.1289/ehp.9086297.
5. Frey AH. "Electromagnetic Field Interactions with Biological Systems." *The FASEB Journal*. Vol. 7, no. 2. (February 1, 1993): 272-281. doi: 10.1096/fasebj.7.2.8440406.
6. Goldsmith JR. "Epidemiological Evidence of Radiofrequency Radiation (Microwave) Effects on Health in Military, Broadcasting and Occupational Settings." *International Journal of Occupational and Environmental Health*. Vol. 1, no. 1. (January 1995): 47-57. doi: 10.1179/oeh.1995.1.1.47.
7. Goldsmith JR. "Epidemiologic Evidence Relevant to Radar (Microwave) Effects." *Environmental Health Perspectives*. Vol. 105, supplement 6. (December 1997): 1579-1587. doi: 10.1289/ehp.97105s61579.
8. Kundi M, Mild K, Hardell L, Mattsson M. "Mobile Telephones and Cancer—A Review of the Epidemiological Evidence." *Journal of Toxicology and Environmental Health, Part B*. Vol. 7, no. 5. (September-October 2004): 351-384. doi: 10.1080/10937400490486258.
9. Kundi M. "Mobile Phone Use and Cancer." *Occupational & Environmental Medicine*. Vol. 61, no. 6. (2004): 560-570. doi: 10.1136/oem.2003.007724.
10. Behari J, Paulraj R. "Biomarkers of Induced Electromagnetic Field and Cancer." *Indian Journal of Experimental Biology*. Vol. 45, no. 1. (January 2007): 77-85.
11. Hardell L, Carlberg M, Soderqvist F, Hansson Mild K. "Meta-Analysis of Long-Term Mobile Phone Use and the Association with Brain Tumors." *International Journal of Oncology*. Vol. 32, no. 5. (May 2008): 1097-1103.
12. Khurana VG, Teo C, Kundi M, Hardell L, Carlberg M. "Cell Phones and Brain Tumors: A Review Including the Long-Term Epidemiologic Data." *Surgical Neurology*. Vol. 72, no. 3. (September 2009): 205-214. doi: 10.1016/j.surneu.2009.01.019.
13. Desai NR, Kesari KK, Agarwal A. "Pathophysiology of Cell Phone Radiation: Oxidative Stress and Carcinogenesis with Focus on Male Reproductive System." *Reproductive Biology and Endocrinology*. Vol. 7. (October 22, 2009): 114. doi: 10.1186/1477-7827-7-114.

14. Davanipour Z, Sobel E. "Long-Term Exposure to Magnetic Fields and the Risks of Alzheimer's Disease and Breast Cancer: Further Biological Research." *Pathophysiology*. Vol. 16, no. 2-3. (August 2009): 149-156. doi: 10.1016/j.pathophys.2009.01.005.
15. Yakymenko I, Sidorik E. "Risks of Carcinogenesis from Electromagnetic Radiation and Mobile Telephony Devices." *Experimental Oncology*. Vol. 32, no. 2. (June 2010): 54-60.
16. Carpenter DO. "Electromagnetic Fields and Cancer: The Cost of Doing Nothing." *Reviews on Environmental Health*. Vol. 25, no. 1. (January-March 2010): 75-80.
17. Giuliani L, Soffriti M (Eds). "Non-Thermal Effects and Mechanisms of Interaction Between Electromagnetic Fields and Living Matter. An ICEMS Monograph." *European Journal of Oncology*. Vol. 5. National Institute for the Study and Control of Cancer and Environmental Diseases "Bernardino Ramazzini." Bologna, Italy. (2010).
18. Khurana VG, Hardell L, Everaert J, Bortkiewicz A, Carlberg M, Ahonen M. "Epidemiological Evidence for a Health Risk from Mobile Phone Base Stations." *International Journal of Occupational and Environmental Health*. Vol. 16, no. 3. (July-September 2010): 263-267. doi: 10.1179/107735210799160192.
19. Yakymenko I, Sidorik E, Kyrylenko S, Chekhun V. "Long-Term Exposure to Microwave Radiation Provokes Cancer Growth: Evidences from Radars and Mobile Communication Systems." *Experimental Oncology*. Vol. 33, no. 2. (June 2011): 62-70.
20. BioInitiative Working Group: Carpenter D, Sage C (Eds). "BioInitiative 2012: A Rationale for Biologically-Based Exposure Standards for Low-Intensity Electromagnetic Radiation." *The BioInitiative Report 2012*. <https://bioinitiative.org/table-of-contents>.
21. Ledoigt G, Belpomme D. "Cancer Induction Molecular Pathways and HF-EMF Irradiation." *Advances in Biological Chemistry*. Vol. 3. (2013): 177-186. doi: 10.4236/abc.2013.32023.
22. Hardell L, Carlberg M. "Using the Hill Viewpoints from 1965 for Evaluating Strengths of Evidence of the Risk for Brain Tumors Associated with Use of Mobile and Cordless Phones." *Reviews on Environmental Health*. Vol. 28, no. 2-3. (2013): 97-106. doi: 10.1515/reveh-2013-0006.
23. Hardell L, Carlberg M, Hansson Mild K. "Use of Mobile Phones and Cordless Phones Is Associated with Increased Risk for Glioma and Acoustic Neuroma." *Pathophysiology*. Vol. 20, no. 2. (2013): 85-110. doi: 10.1016/j.pathophys.2012.11.001.
24. Carpenter DO. "Human Disease Resulting from Exposure to Electromagnetic Fields." *Reviews on Environmental Health*. Vol. 28, no. 4. (2013): 159-172. doi: 10.1515/reveh-2013-0016.
25. Davis DL, Kesari S, Soskolne CL, Miller AB, Stein Y. "Swedish Review Strengthens Grounds for Concluding that Radiation from Cellular and Cordless Phones Is a Probable Human Carcinogen." *Pathophysiology*. Vol. 20, no. 2. (April 2013): 123-129. doi: 10.1016/j.pathophys.2013.03.001.

26. Morgan LL, Miller AB, Sasco A, Davis DL. "Mobile Phone Radiation Causes Brain Tumors and Should Be Classified as a Probable Human Carcinogen (2A) (Review)." *International Journal of Oncology*. Vol. 46, no. 5. (May 2015): 1865-1871. doi: 10.3892/ijo.2015.2908.
27. Mahdavi M, Yekta R, Tackallou SH. "Positive Correlation Between ELF and RF Electromagnetic Fields on Cancer Risk." *Journal of Paramedical Sciences*. Vol. 6, no. 3. (2015). ISSN 2008-4978.
28. Carlberg M, Hardell L. "Evaluation of Mobile Phone and Cordless Phone Use and Glioma Risk Using the Bradford Hill Viewpoints from 1965 on Association or Causation." *BioMed Research International*. Vol. 2017. (2017): 9218486. doi: 10.1155/2017/9218486.
29. Bortkiewicz A, Gadzicka E, Szymczak W. "Mobile Phone Use and Risk for Intracranial Tumors and Salivary Gland Tumors—A Meta-Analysis." *International Journal of Occupational Medicine and Environmental Health*. Vol. 30, no. 1. (February 2017): 27-43. doi: 10.13075/ijom.1896.00802.
30. Bielsa-Fernández P, Rodríguez-Martín B. "Association Between Radiation from Mobile Phones and Tumour Risk in Adults." [Article in Spanish] *Gaceta Sanitaria*. Vol. 32, no. 1. (January-February 2018): 81-91. doi: 10.1016/j.gaceta.2016.10.014.
31. Alegría-Loyola MA, Galnares-Olalde JA, Mercado M. "Tumors of the Central Nervous System." [Article in Spanish] *Revista Medica del Instituto Mexicano del Seguro Social*. Vol. 55, no. 3. (2017): 330-340.
32. Prasad M, Kathuria P, Nair P, Kumar A, Prasad K. "Mobile Phone Use and Risk of Brain Tumours: A Systematic Review of Association Between Study Quality, Source of Funding, and Research Outcomes." *Neurological Sciences*. Vol. 38, no. 5. (May 2017): 797-810. doi: 10.1007/s10072-017-2850-8.
33. Miller A. "References on Cell Phone Radiation and Cancer." (2017). <https://ehtrust.org/references-cell-phone-radio-frequency-radiation-cancer>. Accessed September 9, 2017.
34. Hardell L. "World Health Organization, Radiofrequency Radiation and Health—A Hard Nut to Crack (Review)." *International Journal of Oncology*. Vol. 51, no. 2. (August 2017): 405-413. doi: 10.3892/ijo.2017.4046.
35. Pall ML. "Chapter 7: How Cancer Can Be Caused by Microwave Frequency Electromagnetic Field (EMF) Exposures: EMF Activation of Voltage-Gated Calcium Channels (VGCCs) Can Cause Cancer Including Tumor Promotion, Tissue Invasion and Metastasis via 15 Mechanisms." In Markov M (Ed). *Mobile Communications and Public Health* (pp 163-184). New York, CRC Press, 2018.

# ENDNOTES

## Introduction

1. Kılıç AO, Sari E, Yucel H, Oğuz MM, Polat E, Acoglu EA, Senel S. "Exposure to and Use of Mobile Devices in Children Aged 1–60 Months." *European Journal of Pediatrics*. Vol. 178, no. 2. (2019): 221-227. doi: 10.1007/s00431-018-3284-x.

## Chapter 1: Understanding EMFs

1. Lawrence T, editor; and Rosenberg S, editor. *Cancer: Principles and Practice of Oncology*. Lippincott Williams and Wilkins, Philadelphia, PA. 2008.
2. Reis JA, Bansai N, Qian J, Zhao W, Furdul CM. "Effects of Ionizing Radiation on Biological Molecules—Mechanisms of Damage and Emerging Methods of Detection." *Antioxidants & Redox Signaling*. Vol. 21, no. 2. (July 10, 2014): 260–292. doi: 10.1089/ars.2013.5489.
3. United States Nuclear Regulatory Commission. "Doses in Our Daily Lives." October 2, 2017. <https://www.nrc.gov/about-nrc/radiation/around-us/doses-daily-lives.html>.
4. International Commission on Non-Ionizing Radiation Protection. "ICNIRP Guidelines for Limiting Exposure to Time-Varying Electric, Magnetic and Electromagnetic Fields (Up to 300 GHz)." *Health Physics*. Vol. 74, no. 4. (1998): 494–522. <https://www.icnirp.org/cms/upload/publications/ICNIRPemfgdl.pdf>.
5. Investigate Europe. "How Much Is Safe?" March 14, 2019. <https://www.investigate-europe.eu/publications/how-much-is-safe/>.
6. Pressman AS. *Electromagnetic Fields and Life*. Plenum Press, New York. 1977.
7. Dubrov AP. *The Geomagnetic Field and Life: Geomagnetobiology*. Plenum Press, New York. 1978.
8. Panagopoulos DJ, Johansson O, Carlo GL. "Real versus Simulated Mobile Phone Exposures in Experimental Studies." *BioMed Research International*. (2015): 607053. doi: 10.1155/2015/607053.



9. Frei M, Jauchem J, Heinmets F. "Physiological Effects of 2.8 GHz Radio-Frequency Radiation: A Comparison of Pulsed and Continuous-Wave Radiation." *Journal of Microwave Power and Electromagnetic Energy*. Vol. 23, no. 2. (1988): 88. <https://www.ncbi.nlm.nih.gov/pubmed/3193341>.
10. Huber R, Treyer V, Borbély AA, Schuderer J, Gottselig JM, Landolt HP, Werth E, Berthold T, Kuster N, Buck A, Achermann P. "Electromagnetic Fields, Such as Those from Mobile Phones, Alter Regional Cerebral Blood Flow and Sleep and Waking EEG." *Journal of Sleep Research*. Vol. 11, no. 4. (2002): 289–295. <https://www.ncbi.nlm.nih.gov/pubmed/12464096>.
11. Campisi A, Gulino M, Acquaviva R, Bellia P, Raciti G, Grasso R, Musumeci F, Vanella A, Triglia A. "Reactive Oxygen Species Levels and DNA Fragmentation on Astrocytes in Primary Culture after Acute Exposure to Low Intensity Microwave Electromagnetic Field." *Neuroscience Letters*. Vol. 473, no. 1. (2010): 52–5. doi: 10.1016/j.neulet.2010.02.018.
12. Höytö A, Luukkonen J, Juutilainen J, Naarala J. "Proliferation, Oxidative Stress and Cell Death in Cells Exposed to 872 MHz Radiofrequency Radiation and Oxidants." *Radiation Research*. Vol. 170, no. 2. (2008): 235–243. doi: 10.1667/RR1322.1.
13. Goodman EM, Greenebaum B, Marron MT. "Effects of Electromagnetic Fields on Molecules and Cells." *International Review of Cytology*. Vol. 158. (1995): 279–338. <https://www.ncbi.nlm.nih.gov/pubmed/7721540>.
14. Panagopoulos DJ, Karabarbounis A, Lioliousis C. "ELF Alternating Magnetic Field Decreases Reproduction by DNA Damage Induction." *Cell Biochemistry and Biophysics*. Vol. 67, no. 2. (2013): 703–716. doi: 10.1007/s12013-013-9560-5.
15. Franzellitti S, Valbonesi P, Ciancaglini N, Biondi C, Contin A, Bersani F, Fabbri E, "Transient DNA Damage Induced by High-Frequency Electromagnetic Fields (GSM 1.8 GHz) in the Human Trophoblast HTR-8/SVneo Cell Line Evaluated with the Alkaline Comet Assay." *Mutation Research*. Vol. 683, no. 1-2. (2010): 35–42. doi: 10.1016/j.mrfmmm.2009.10.004.
16. Zhao L, Liu X, Wang C, Yan K, Lin X, Li S, Bao H, Liu X. "Magnetic Fields Exposure and Childhood Leukemia Risk: A Meta-Analysis Based on 11,699 Cases and 13,194 Controls." *Leukemia Research*. Vol. 38, no. 3. (2014): 269-274. doi: 10.1016/j.leukres.2013.12.008.
17. Wertheimer N, Leeper E. "Electrical Wiring Configurations and Childhood Cancer." *American Journal of Epidemiology*. Vol. 109, no. 3. (March 1979): 273–284. doi: 10.1093/oxfordjournals.aje.a112681.
18. Wartenberg D. "Residential Magnetic Fields and Childhood Leukemia: a Meta-Analysis." *American Journal of Public Health*. Vol. 88, no. 12. (1998): 1787–1794. doi:10.2105/ajph.88.12.1787.
19. Li D-K, Odouli R, Wi S, Janevic T, Golditch I, Bracken TD, Senior R, Rankin R, Iriye R. "A Population-Based Prospective Cohort Study of Personal Exposure to Magnetic Fields During Pregnancy and the Risk of Miscarriage." *Epidemiology*. Vol. 13, no. 1. (January 2002): 9–20.
20. Lee GM, Neutra RR, Hristova L, Yost M, Hiatt RA. "A Nested Case-Control Study of Residential and Personal Magnetic Field Measures and Miscarriages." *Epidemiology*. Vol. 13, no. 1. (January 2002): 21–31

21. "Dirty Electricity—Stealth Trigger of Disease Epidemics and Lowered Life Expectancy," Mercola.com, May 28, 2017.
22. United Nations Department of Economic and Social Affairs. "High-Level Political Forum Goals in Focus. Goal 7: Ensure Access to Affordable, Reliable, Sustainable and Modern Energy for All." Accessed July 23, 2019. <https://unstats.un.org/sdgs/report/2018/goal-07/>.
23. International Energy Agency. "Sustainable Development Goal 7: Ensure Access to Affordable, Reliable, Sustainable and Modern Energy for All." Accessed July 23, 2019. <https://www.iea.org/sdg/electricity/>.
24. The International Energy Agency. "World Energy Outlook 2017." 2017. <https://www.iea.org/weo2017/>.
25. Anonymous, "Is the X Ray a Curative Agent?" *Chicago Daily Tribune*. April 14, 1896.
26. "Operated on 72 Times." *New York Times*. March 12, 1926, page 22.
27. Bavley, H. "Shoe-Fitting with X-Ray." *National Safety News*. Vol. 62, no. 3. (1950): 107-111.
28. "City Sets Control of X-Ray Devices; Health Board Restricts Use and Sale to Professionals to Cut Radiation Peril." *New York Times*. January 23, 1958, page 29.
29. Van Allen WW, Van Allen WW. "Hazards of Shoe-Fitting Fluoroscopes." *Public Health Reports*. Vol. 66, no. 12. (1951): 375-378. doi: 10.2307/4587674.
30. "X Ray Shoe Fitters a Peril, Ewing Says." *New York Times*. March 29, 1950, page 38.
31. Miller RW. "Some Potential Hazards of the Use of Roentgen Rays." *Pediatrics*. Vol. 11, no. 3. (March 1953): 294-303.
32. Wheatley GM. "Shoe-Fitting Fluoroscopes." *Pediatrics*. Vol. 11, no. 2. (February 1953): 189-90.
33. ICRP. "Recommendations of the International Commission on Radiological Protection." *British Journal of Radiology*. Supplement 6. 1955.
34. "X-Rays for Shoes Barred." *New York Times*. January 27, 1957, page 65.
35. "Shoe X-Rays Scored; Health Service Urges States to Curb the Fluoroscopes." *New York Times*. August 19, 1960, page 10.
36. "The Hazards of Shoe Fitting." *Canadian Medical Association Journal*. Vol. 74, no. 3. (February 1, 1956): 234.
37. "U.S. Census Bureau History: Did You Know?" October 2015. [https://www.census.gov/history/www/homepage\\_archive/2015/october\\_2015.html](https://www.census.gov/history/www/homepage_archive/2015/october_2015.html).
38. Peter Kerr. "Cordless Phones Catching On." *New York Times*. February 16, 1983.
39. Eric Mack. "The First Commercial Cell Call Was Made 30 Years Ago on a \$9,000 Phone." *Forbes*. October 13, 2013.
40. Mercola.com.
41. Telecommunication Development Bureau. "ICT Facts & Figures: The World in 2015." International Telecommunications Union. May 2015. <https://www.itu.int/en/ITU-D/Statistics/Documents/facts/ICTFactsFigures2015.pdf>.

42. Mercola.com.
43. World Bank, TCdata360. "Mobile Network Coverage, % Population." Accessed July 25, 2019. [https://tcdata360.worldbank.org/indicators/entrp.mob.cov?country=USA&indicator=3403&viz=line\\_chart&years=2012,2016](https://tcdata360.worldbank.org/indicators/entrp.mob.cov?country=USA&indicator=3403&viz=line_chart&years=2012,2016).
44. Mercola.com.
45. Aaron Smith. "Record Shares of Americans Now Own Smartphones, Have Home Broadband." *Factank*, Pew Research Center. January 12, 2017.
46. Statista Research Department. "Number of Tablet Users in the United States from 2014 to 2020 (in Millions)." Edited March 2, 2016.
47. Jeffrey I. Cole, Ph.D., Michael Suman, Ph.D., Phoebe Schramm, Ph.D., Liuning Zhou, Ph.D. "The 2017 Digital Future Report: Surveying the Digital Future." Center for the Digital Future. University of Southern California. 2017.
48. Statista Research Department. "Internet of Things (IoT) Connected Devices Installed Base Worldwide from 2015 to 2025 (in Billions)." Edited November 27, 2016.
49. Johansson O, Flydal E. "Health Risk from Wireless? The Debate Is Over." *ElectromagneticHealth.org* (blog). 2014. <http://electromagnetichealth.org/electromagnetic-health-blog/article-by-professor-olle-johansson-health-risk-from-wireless-the-debate-is-over/>.

## Chapter 2: 5G: The Single Biggest Health Experiment Ever

1. Burrell L. "5G Radiation Dangers: 11 Reasons to Be Concerned." *ElectricSense*. Last modified April 24, 2019. <https://www.electricsense.com/5g-radiation-dangers/>.
2. "Gartner Says 8.4 Billion Connected 'Things' Will Be in Use in 2017, up 31 Percent from 2016." Gartner press release. Egham, U.K. February 7, 2017. <https://www.gartner.com/en/newsroom/press-releases/2017-02-07-gartner-says-8-billion-connected-things-will-be-in-use-in-2017-up-31-percent-from-2016>.
3. Selena Larson. "Verizon to Test 5G in 11 Cities." *CNN Business*. February 22, 2017. <https://money.cnn.com/2017/02/22/technology/verizon-5g-testing/index.html>.
4. "AT&T Bringing 5G to More U.S. Cities in 2018." *AT&T.com*. July 20, 2018. [https://about.att.com/story/5g\\_to\\_launch\\_in\\_more\\_us\\_cities\\_in\\_2018.html](https://about.att.com/story/5g_to_launch_in_more_us_cities_in_2018.html).
5. "Mobile 5G Becoming a Reality in 12 Cities with Rapid Enhancements to Follow as the Ecosystem Evolves." *AT&T.com*. December 18, 2018. [https://about.att.com/story/2018/att\\_brings\\_5g\\_service\\_to\\_us.html](https://about.att.com/story/2018/att_brings_5g_service_to_us.html).
6. James Temperton, "A 'Fourth Industrial Revolution' Is about to Begin (In Germany)." *Wired*. May 21, 2015. <https://www.wired.co.uk/article/factory-of-the-future>.
7. IHS Economics and IHS Technology. "The 5G Economy: How 5G Technology Will Contribute to the Global Economy." *IHS.com*. January, 2017. <https://www.qualcomm.com/media/documents/files/ihs-5g-economic-impact-study.pdf>.
8. Allan Holmes. "5G Cell Service Is Coming. Who Decides Where It Goes?" *New York Times*. March 2, 2018. <https://www.nytimes.com/2018/03/02/technology/5g-cellular-service.html>.

9. CSPAN. "FCC Chair Tom Wheeler Delivers Remarks on 5G Networks." June 25, 2016. [https://archive.org/details/CSPAN\\_20160625\\_230000\\_FCC\\_Chair\\_Tom\\_Wheeler\\_Delivers\\_Remarks\\_on\\_5G\\_Networks](https://archive.org/details/CSPAN_20160625_230000_FCC_Chair_Tom_Wheeler_Delivers_Remarks_on_5G_Networks).
10. John P. Thomas. "5G from Space: 20,000 Satellites to Blanket the Earth." Technocracy. January 8, 2019. <http://www.technocracy.news/5g-from-space-20000-satellites-to-blanket-the-earth/>.  
Jeanine Marie Russaw. "SpaceX Looks to Add 30,000 New Satellites to Starlink Mission." *Newsweek*. October 19, 2019. <https://www.newsweek.com/spacex-satellites-starlink-mission-1466480>.
11. Eric Ralph. "SpaceX's First Dedicated Starlink Launch Announced as Mass Production Begins." *Teslarati*. April 8, 2019. <https://www.teslarati.com/spacex-starlink-first-launch-date>.
12. Global Union Against Radiation Deployment from Space. "Planned Global WiFi from Space Will Destroy Ozone Layer, Worsen Climate Change, and Threaten Life on Earth." Accessed April 14, 2019. <http://www.stopglobalwifi.org>.
13. ISPreview. "London Scientists Prep 10 Gbps Home Wireless Network Using Li-Fi and 5G." September 14, 2017. <https://www.ispreview.co.uk/index.php/2017/09/london-scientists-prep-10gbps-home-wireless-network-using-li-fi-5g.html>.
14. Electronic Products. "5G in a Light Bulb? Scientists Explore LED-Based 10-Gbps Li-Fi Network." September 21, 2017. [https://www.electronicproducts.com/Optoelectronics/LEDs/5G\\_in\\_a\\_light\\_bulb\\_Scientists\\_explore\\_LED\\_based\\_10\\_Gbps\\_Li-Fi\\_network.aspx](https://www.electronicproducts.com/Optoelectronics/LEDs/5G_in_a_light_bulb_Scientists_explore_LED_based_10_Gbps_Li-Fi_network.aspx).
15. EMFields Solutions. "5G Update." August 15, 2017. <http://www.lessemf.com/5G.pdf>.
16. Lebedeva NN. "Sensor and Subsensor Reactions of a Healthy Man to Peripheral Effects of Low-Intensity Millimeter Waves." (In Russian.) *Millimetrovie Volni v Biologii i Meditsine*. Vol. 2 (1993): 5–23.
17. Lebedeva NN. "Neurophysiological Mechanisms of Biological Effects of Peripheral Action of Low-Intensity Nonionizing Electromagnetic Fields in Humans." (In Russian.) 10th Russian Symposium "Millimeter Waves in Medicine and Biology," Moscow, Russia. (April 1995): 138–140.
18. Golovacheva TV. "EHF Therapy in Complex Treatment of Cardiovascular Diseases." (In Russian.) 10th Russian Symposium "Millimeter Waves in Medicine and Biology," Moscow, Russia. (April 1995): 29–31.
19. Afanas'eva TN, Golovacheva TV. "Side Effects of the EHF-therapy for Essential Hypertension." (In Russian.) 11th Russian Symposium "Millimeter Waves in Medicine and Biology," Zvenigorod, Russia. (April 1997): 26–28.
20. Zalyubovskaya NP. "Biological Effect of Millimeter Radiowaves." (In Russian.) *Vracheboyne Delo*. No. 3. (1977): 116–119. <https://drive.google.com/file/d/1mX1fSfTzvWIXJB0CQ8POLD0XhBQSpDv/view>.  
Joel Moskowitz. "5G Wireless Technology: Millimeter Wave Health Effects." Electromagnetic Radiation Safety. November 14, 2018 (updated February 22, 2019). <https://www.saferemr.com/2017/08/5g-wireless-technology-millimeter-wave.html>.
21. EMFields Solutions. "5G Update." August 15, 2017. <http://www.lessemf.com/5G.pdf>.
22. Jody McCutcheon. "Frightening Frequencies: The Dangers of 5G." *Eluxe Magazine*. Accessed on April 15, 2019. <https://eluxemagazine.com/magazine/dangers-of-5g/>.

23. ElectricSense. "The Dangers of 5G—11 Reasons to Be Concerned." May 30, 2018. [https://ecfsapi.fcc.gov/file/1053072081009/5G%20Radiation%20Dangers%20-%2011%20Reasons%20To%20Be%20Concerned%20\\_%20ElectricSense.pdf](https://ecfsapi.fcc.gov/file/1053072081009/5G%20Radiation%20Dangers%20-%2011%20Reasons%20To%20Be%20Concerned%20_%20ElectricSense.pdf).
24. Dr. Cindy Russell. "A 5G Wireless Future: Will It Give Us a Smart Nation or Contribute to an Unhealthy One?" *The Bulletin*. January–February 2017. [https://ecfsapi.fcc.gov/file/10308361407065/5%20G%20Wireless%20Future-SCCMA%20Bulletin\\_FEB%202017\\_.pdf](https://ecfsapi.fcc.gov/file/10308361407065/5%20G%20Wireless%20Future-SCCMA%20Bulletin_FEB%202017_.pdf).
25. References for "A 5G Wireless Future" by Dr. Cindy Russell (PDF). <http://www.sccma-mcms.org/Portals/19/assets/docs/References5garticle.pdf?ver=2017-03-10-112153-967>.
26. Prost M, Olchowik G, Hautz W, Gaweda R. "Experimental Studies on the Influence of Millimeter Radiation on Light Transmission through the Lens." *Klin Oczna*. Vol. 96, no. 8-9 (August–September 1994): 257–9. <https://www.ncbi.nlm.nih.gov/pubmed/7897988>.
27. Kojima M, Hanazawa M, Yamashiro Y, Sasaki H, Watanabe S, Taki M, Suzuki Y, Hirata A, Kamimura Y, Sasaki K. "Acute Ocular Injuries Caused by 60-GHz Millimeter-Wave Exposure." *Health Physics*. Vol. 97, no. 3. (September, 2009): 212–8. doi: 10.1097/HP.0b013e3181abaa57.
28. Wang KJ, Yao K, Lu DQ, Jiang H, Tan J, Xu W. "Effect of Low-Intensity Microwave Radiation on Proliferation of Cultured Epithelial Cells of Rabbit Lens." *Zhonghua Lao Dong Wei Sheng Zhi Ye Bing Za Zhi (Chinese Journal of Industrial Hygiene and Occupational Diseases)*. Vol. 21, no. 5. (October 2003): 346–9.
29. Potekhina IL, Akoev GN, Enin LD, Oleiner VD. "The Effect of Low-Intensity Millimeter-Range Electromagnetic Radiation on the Cardiovascular System of the White Rat." (In Russian.) *Fiziol Zh SSSR Im I M Sechenova (Sechenov Physiological Journal of the USSR)*. Vol. 78, no. 1. (January 1992): 35–41.
30. Dr. Cindy Russell. "A 5G Wireless Future: Will It Give Us a Smart Nation or Contribute to an Unhealthy One?" *The Bulletin*. January–February 2017. [https://ecfsapi.fcc.gov/file/10308361407065/5%20G%20Wireless%20Future-SCCMA%20Bulletin\\_FEB%202017\\_.pdf](https://ecfsapi.fcc.gov/file/10308361407065/5%20G%20Wireless%20Future-SCCMA%20Bulletin_FEB%202017_.pdf).
31. References for "A 5G Wireless Future" by Dr. Cindy Russell (PDF). <http://www.sccma-mcms.org/Portals/19/assets/docs/References5garticle.pdf?ver=2017-03-10-112153-967>.
32. Dr. Cindy Russell. "A 5G Wireless Future: Will It Give Us a Smart Nation or Contribute to an Unhealthy One?" *The Bulletin*. January–February 2017. [https://ecfsapi.fcc.gov/file/10308361407065/5%20G%20Wireless%20Future-SCCMA%20Bulletin\\_FEB%202017\\_.pdf](https://ecfsapi.fcc.gov/file/10308361407065/5%20G%20Wireless%20Future-SCCMA%20Bulletin_FEB%202017_.pdf).
33. References for "A 5G Wireless Future" by Dr. Cindy Russell (PDF). <http://www.sccma-mcms.org/Portals/19/assets/docs/References5garticle.pdf?ver=2017-03-10-112153-967>.
34. Ramundo-Orlando A. "Effects of Millimeter Waves Radiation on Cell Membrane—A Brief Review." *Journal of Infrared, Millimeter, and Terahertz Waves*. Vol. 31, no. 12. (December 2010): 1400–11.
35. Kolomytseva MP, Gapeey AB, Sadovniko VB, Chemeris NK. "Suppression of Nonspecific Resistance of the Body under the Effect of Extremely High Frequency Electromagnetic Radiation of Low Intensity." *Biofizika (Biophysics)*. Vol. 47, no. 1. (January–February 2002): 71–7.

36. Soghomonyan D, Trchounian K, Trchounian A. "Millimeter Waves or Extremely High Frequency Electromagnetic Fields in the Environment: What Are Their Effects on Bacteria?" *Applied Microbiology and Biotechnology*. Vol. 100, no. 11. (June 2016): 4761–4771. doi: 10.1007/s00253-016-7538-0.
37. Martin L. Pall, Ph.D. "5G: Great Risk for EU, U.S. and International Health! Compelling Evidence for Eight Distinct Types of Great Harm Caused by Electromagnetic Field (EMF) Exposures and the Mechanism That Causes Them." May 17, 2018. Page 81. <https://peaceinspace.blogs.com/files/5g-emf-hazards--dr-martin-l.-pall--eu-emf2018-6-11us3.pdf>.
38. Burrell L. "5G Radiation Dangers: 11 Reasons to Be Concerned." ElectricSense. Last modified April 24, 2019. <https://www.electricsense.com/5g-radiation-dangers/>.
39. Dr. Cindy Russell. "A 5G Wireless Future: Will It Give Us a Smart Nation or Contribute to an Unhealthy One?" *The Bulletin*. January–February 2017. [https://ecfsapi.fcc.gov/file/10308361407065/5%20G%20Wireless%20Future-SCCMA%20Bulletin\\_FEB%202017\\_pdf.pdf](https://ecfsapi.fcc.gov/file/10308361407065/5%20G%20Wireless%20Future-SCCMA%20Bulletin_FEB%202017_pdf.pdf).
40. References for "A 5G Wireless Future" by Dr. Cindy Russell (PDF). <http://www.sccma-mcms.org/Portals/19/assets/docs/References5garticle.pdf?ver=2017-03-10-112153-967>.
41. Environmental Health Trust. "Letter to the FCC from Dr. Yael Stein MD in Opposition to 5G Spectrum Frontiers." July 9, 2016. <https://ehtrust.org/letter-fcc-dr-yael-stein-md-opposition-5g-spectrum-frontiers/>.
42. Grassroots Environmental Education. "5th Generation (5G) Wireless Communications Fact Sheet." Accessed April 14, 2019. [https://www.telecompowergrab.org/uploads/3/8/5/9/38599771/5g\\_fact\\_sheet\\_v9.pdf](https://www.telecompowergrab.org/uploads/3/8/5/9/38599771/5g_fact_sheet_v9.pdf).
43. Environmental Health Trust. "Letter to the FCC from Dr. Yael Stein MD in Opposition to 5G Spectrum Frontiers." July 9, 2016. <https://ehtrust.org/letter-fcc-dr-yael-stein-md-opposition-5g-spectrum-frontiers/>.
44. Shafirstein G, Moros EG. "Modelling Millimetre Wave Propagation and Absorption in a High Resolution Skin Model: the Effect of Sweat Glands." *Physics in Medicine & Biology*. Vol. 56, no. 5. (2011): 1329–39. doi: 10.1088/0031-9155/56/5/007.
45. Environmental Health Trust. "Letter to the FCC from Dr. Yael Stein MD in Opposition to 5G Spectrum Frontiers." July 9, 2016. <https://ehtrust.org/letter-fcc-dr-yael-stein-md-opposition-5g-spectrum-frontiers/>.
46. Joint Non-Lethal Weapons Program. "Active Denial Technology Fact Sheet." U.S. Department of Defense. May 2016. [https://jnlwp.defense.gov/Portals/50/Documents/Press\\_Room/Fact\\_Sheets/ADT\\_Fact\\_Sheet\\_May\\_2016.pdf](https://jnlwp.defense.gov/Portals/50/Documents/Press_Room/Fact_Sheets/ADT_Fact_Sheet_May_2016.pdf).
47. Environmental Health Trust. "Top Facts on 5G: What You Need to Know about 5G Wireless and 'Small' Cells." Accessed April 15, 2019. <https://ehtrust.org/key-issues/cell-phoneswireless/5g-internet-everything/20-quick-facts-what-you-need-to-know-about-5g-wireless-and-small-cells/>.
48. Nerkararyan AV, Shahinyan MA, Mikaelyan MS, Vardevanyan PO. "Effect of Millimeter Waves with Low Intensity on Peroxidase Total Activity and Isoenzyme Composition in Cells of Wheat Seedling Shoots." *International Journal of Scientific Research in Environmental Sciences*. Vol. 1, no. 9. (2013): 217–223. doi: 10.12983/ijres-2013-p217-223.

49. Sánchez-Bayo F, Wyckhuys CAG. "Worldwide Decline of the Entomofauna: A Review of Its Drivers." *Biological Conservation*. Vol. 232. (2019): 8–27. doi: 10.1016/j.biocon.2019.01.020.
50. Bond S, Wang K-K. "The Impact of Cell Phone Towers on House Prices in Residential Neighborhoods." *The Appraisal Journal*. Summer 2005. <http://electromagnetichealth.org/wp-content/uploads/2014/06/TAJSummer05p256-277.pdf>.
51. National Association of Realtors. "Cell Towers, Antennas Problematic for Buyers." *Realtor Magazine*. July 25, 2014. <https://magazine.realtor/daily-news/2014/07/25/cell-towers-antennas-problematic-for-buyers>.
52. Ibid.
53. Office of Richard Blumenthal, United States Senator for Connecticut. "At Senate Commerce Hearing, Blumenthal Raises Concerns on 5G Wireless Technology's Potential Health Risks." February 7, 2019. <https://www.blumenthal.senate.gov/newsroom/press/release/at-senate-commerce-hearing-blumenthal-raises-concerns-on-5g-wireless-technologys-potential-health-risks>.
54. "Scientists Warn of Potential Serious Health Effects of 5G." Environmental Health Trust. September 13, 2017. <https://ehtrust.org/wp-content/uploads/Scientist-5G-appeal-2017.pdf>.
55. "International Appeal: Stop 5G on Earth and in Space." June 7, 2019. <https://www.5gSpaceAppeal.org>.
56. Maurizio Martucci. "'It Causes Damage to the Body!' Florence Brakes on 5G and Applies the Precautionary Principle. Motion in Defense of Health Approved (Almost) Unanimous." [Article in Italian.] Oasi Sana. April 5, 2019. <https://oasisana.com/2019/04/05/provoca-danni-al-corpo-firenze-frena-sul-5g-e-applica-il-principio-di-precauzione-approvata-con-voto-quasi-unanime-la-mozione-in-difesa-della-salute-notizia-esclusiva-oasi-sana/>.
57. "Italian Court Orders Government To Launch Cell Phone Radiation Awareness Campaign." Environmental Health Trust. <https://ehtrust.org/italian-court-orders-government-to-launch-cell-phone-radiation-awareness-campaign/>.
58. Peter Winterman. "Chamber Wants Radiation Research First, Then 5G Network." [Article in Dutch.] *AD News*. April 4, 2019. <https://www.ad.nl/tech/kamer-wil-eerst-stralingsonderzoek-dan-pas-5g-netwerk-ab567cd6/>.
59. "Germans Petition Parliament to Stop 5G Auction on Health Grounds." *Telecompaper*. April 8, 2019. <https://www.telecompaper.com/news/germans-petition-parliament-to-stop-5g-auction-on-health-grounds--1287962>.
60. Anouch Seydtaghia. "5G: After the Vaud Moratorium, the Storm." [Article in French.] *Le Temps*. April 9, 2019. <https://www.letemps.ch/suisse/5g-apres-moratoire-vaudois-tempete>.
61. "Geneva Adopts Motion for a Moratorium on 5G." [Article in French.] *Le Temps*. April 11, 2019. [www.letemps.ch/suisse/geneve-adopte-une-motion-un-moratoire-5g](http://www.letemps.ch/suisse/geneve-adopte-une-motion-un-moratoire-5g).
62. "A Municipality of Rome Votes against 5G: What Will the Giunta Do?" [Article in Italian.] *Terra Nuova*. March 28, 2019. <http://www.terranuova.it/News/Attualita/Un-Municipio-di-Roma-vota-contro-il-5G-cosa-fara-la-Giunta>.



63. Valery Kodachigov. "The Ministry of Defense Refused to Transmit to the Operators the Frequencies for 5G." [Article in Russian.] *Vedomosti*. March 28, 2019. <https://www.vedomosti.ru/technology/articles/2019/03/28/797714-minoboroni-otkazalos-peredavat-5g>.
64. "Radiation Concerns Halt Brussels 5G Development, for Now." *The Brussels Times*. April 1, 2019. <https://www.brusselstimes.com/brussels/55052/radiation-concerns-halt-brussels-5g-for-now/>.
65. Bob Egelko. "Court Upholds SF's Right to Prevent Telecom Companies from Marring Scenic Views." *San Francisco Chronicle*. April 4, 2019. <https://www.sfchronicle.com/bayarea/article/Court-upholds-SF-s-right-to-prevent-telecom-13742615.php>.
66. "Exhibit 1: Small Cell 5G Health Study Resolution." Hallandale Beach, Florida. 2019. <https://ehtrust.org/wp-content/uploads/Hallandale-Small-Cell-5G-Health-Study-Resolution.pdf>.
67. "House Joint Resolution No. 13, Introduced by D. Dunn, A. Olsen." State of Montana. [https://leg.mt.gov/bills/2019/billpdf/HJ0013.pdf?fbclid=IwAR1SPkpWFE99JZWKTMiVJfrw\\_IZ04LhvO6laVo7iQKZzGN67nfK7w9o88pE](https://leg.mt.gov/bills/2019/billpdf/HJ0013.pdf?fbclid=IwAR1SPkpWFE99JZWKTMiVJfrw_IZ04LhvO6laVo7iQKZzGN67nfK7w9o88pE).
68. Keaton Thomas. "5G Wireless Technology Comes with Big Promises, but City of Portland Has Big Concerns." KATU News. March 12, 2019. <https://katu.com/news/local/5g-wireless-technology-comes-with-big-promises-but-the-city-of-portland-has-big-concerns>.
69. "Chapter 12.18 – Wireless Telecommunications Facilities in the Public Right-of-Way." City of Rancho Palos Verdes Municipal Code. May 7, 2019. [https://library.municode.com/ca/rancho\\_palos\\_verdes/codes/code\\_of\\_ordinances?nodeId=TIT12STSIPUPL\\_CH12.18WITEFAPURI-W](https://library.municode.com/ca/rancho_palos_verdes/codes/code_of_ordinances?nodeId=TIT12STSIPUPL_CH12.18WITEFAPURI-W).
70. New Hampshire HB522: Establishing a Commission to Study the Environmental and Health Effects of Evolving 5G Technology, adopted by both bodies in the 2019 legislative session. [https://trackbill.com/bill/new-hampshire-house-bill-522-establishing-a-commission-to-study-the-environmental-and-health-effects-of-evolving-5g-technology/1630657/?fbclid=IwAR28psMtRFU7mBGMmA8SKxoS0AIkf8LzcQR7e7vO\\_MiifUzs0N4GfUNcLC4](https://trackbill.com/bill/new-hampshire-house-bill-522-establishing-a-commission-to-study-the-environmental-and-health-effects-of-evolving-5g-technology/1630657/?fbclid=IwAR28psMtRFU7mBGMmA8SKxoS0AIkf8LzcQR7e7vO_MiifUzs0N4GfUNcLC4).
71. "Ordinance No. 819: An Urgency Ordinance of the Town Council of the Town of Fairfax Enacting Title 20 ('Telecommunications') of the Fairfax Municipal Code to Establish New Regulations for Wireless Telecommunications Facilities." Accessed April 5, 2019. <https://storage.googleapis.com/proudcity/fairfaxca/uploads/2018/10/Ord-819-URGENCYsmall-cell.pdf>.
72. "San Rafael City Council Agenda Report." December 17, 2018. <https://ehtrust.org/wp-content/uploads/6.c-Small-Wireless-Facilities.pdf>.
73. "Agenda Item Summary, City Council Meeting, November 5, 2018." City of Sonoma, California. <https://sonomacity.civicweb.net/document/17797>.
74. Adrian Rodriguez. "Ross Valley Officials Work to Tighten 5G Antenna Rules." *Marin Independent Journal*. October 27, 2018. <https://www.mariniij.com/2018/10/27/ross-valley-officials-work-to-tighten-5g-antenna-rules/>.



75. Adrian Rodriguez. "California Town Looks for Alternatives to Small Cell Installations." *Marin Independent Journal*. October 5, 2018. <https://www.govtech.com/network/California-Town-Looks-for-Alternatives-to-Small-Cell-Installations.html>.
76. "Town of Burlington Policy, Applications for Small Cell Wireless Installations." Accepted by Board of Selectmen October 22, 2018. <http://cms2.revize.com/revize/burlingtonma/Small.Cell.Wireless.Equipment.Policy.Approved.10.22.2018.BURLINGTON.MA.pdf>.
77. Rich Hosford. "Verizon Drops Small Cell Wireless Booster Application in Face of Fees." Burlington Cable Access Television. October 23, 2018. <http://www.bcattv.org/bnews/top-stories/verizon-drops-small-cell-wireless-booster-application-in-face-of-fees/>.
78. Glenn M. Parrish. "Cell Tower Ordinance Read for First Time at Council Meeting." *Booneville Democrat*. September 5, 2018. <https://www.boonevilledemocrat.com/news/20180905/cell-tower-ordinance-read-for-first-time-at-council-meeting>.
79. "Mill Valley Staff Report." September 6, 2018. [http://cityofmillvalley.granicus.com/MetaViewer.php?view\\_id=2&clip\\_id=1290&meta\\_id=59943](http://cityofmillvalley.granicus.com/MetaViewer.php?view_id=2&clip_id=1290&meta_id=59943).
80. Petaluma Municipal Code, Ordinance 2674, passed November 19, 2018. <https://www.codepublishing.com/CA/Petaluma/>.
81. "Small Cell Towers Nixed in 7-Hour Monterey Planning Commission Meeting." *Cedar Street Times*. March 19, 2018. <http://www.cedarstreettimes.com/18237-2/>.
82. To see the code online go to <https://qcode.us/codes/walnut/>, click on "Title 6: Planning and Zoning," click on "Chapter 6.88: Antennas and Communication Facilities," click on "6.88.060: Design standards," see item "O."
83. Bob Fernandez. "Philly, Suburbs Brace for 'Attack of the Small Cells' Towers." *Philadelphia Inquirer*. June 1, 2017. <https://www.philly.com/philly/business/comcast/philly-and-suburbs-brace-for-attack-of-the-small-cells-20170601.html?arc404=true>.
84. William Kelly. "Official: Palm Beach Exempt from 5G Wireless Law." *Palm Beach Daily News*. May 3, 2017. <https://www.palmbeachdailynews.com/news/20170503/official-palm-beach-exempt-from-5g-wireless-law>.
85. "Part Eleven Zoning Ordinance." City of Mason, Ohio. Revised May 15, 2017. <https://www.imagemason.org/download/PDFs/building/MasonZoningCodev-05-15-2017.pdf>.
86. "Town of Warren, Section 20 – Special Permit for Telecommunications Facilities and Towers." December 11, 2012. [https://ehtrust.org/wp-content/uploads/Warren\\_Zoning\\_Telecom\\_Regs\\_-\\_December\\_11\\_2012-4.pdf](https://ehtrust.org/wp-content/uploads/Warren_Zoning_Telecom_Regs_-_December_11_2012-4.pdf).
87. C. Robert Gibson. "How a Mid-Sized Tennessee Town Took on Comcast, Revived Its Economy, and Did It With Socialism." *Huffington Post*. March 6, 2015 (updated May 6, 2015). [http://www.huffingtonpost.com/carl-gibson/chattanooga-socialism\\_b\\_6812368.html](http://www.huffingtonpost.com/carl-gibson/chattanooga-socialism_b_6812368.html).
88. Trevor Hughes. "Town Creates High-Speed Revolution, One Home at a Time." *USA Today*. November 19, 2014. <https://www.usatoday.com/story/news/nation/2014/11/19/longmont-internet-service/19294335/>.

89. Katherine Tweed. "Bell Labs Sets New Record for Internet over Copper." IEEE Spectrum. July 14, 2014. <http://spectrum.ieee.org/tech-talk/telecom/internet/bell-labs-sets-new-record-for-internet-over-copper>.
90. "New Method Examined to Bring Fiber Optics to Homes." *Durango Herald*. May 6, 2018. <https://durangoherald.com/articles/221644>.

### Chapter 3: Cell Phones Are the Cigarettes of the 21st Century

1. Brandt AM. "Inventing Conflicts of Interest: A History of Tobacco Industry Tactics." *American Journal of Public Health*. Vol. 102, no. 1. (January 2012): 63–71. doi: 10.2105/AJPH.2011.300292.
2. Glantz SA, Slade J, Bero LA, Hanauer P, Barnes DE. *The Cigarette Papers*. 1998: University of California Press. Berkeley, California. Page 188.
3. Turner C and Spilich GJ. "Research into Smoking or Nicotine and Human Cognitive Performance: Does the Source of Funding Make a Difference?" *Addiction*. Vol. 92, no. 11. (1997): 1423–1426. <https://pdfs.semanticscholar.org/d1ba/670b367bab2df3bd9ffcf5ae33d24c9688e3.pdf>.
4. Ibid.
5. Brownell KC, Warner KE. "The Perils of History: Big Tobacco Played Dirty and Millions Died. How Similar is Big Food?" *Milbank Quarterly*. Vol. 87, no. 1. (2009): 259–294. doi: 10.1111/j.1468-0009.2009.00555.x.
6. Broder JM. "Cigarette Maker Concedes Smoking Can Cause Cancer." *New York Times*. March 21, 1997. <https://www.nytimes.com/1997/03/21/us/cigarette-maker-concedes-smoking-can-cause-cancer.html>.
7. Milberger S, Davis RM, Douglas CE, Beasley JK, Burns D, Houston T, Shopland D. "Tobacco Manufacturers' Defence against Plaintiffs' Claims of Cancer Causation: Throwing Mud at the Wall and Hoping Some of It Will Stick." *Tobacco Control*. Vol. 15, suppl. 4. (December 2006): iv17–iv26. doi: 10.1136/tc.2006.016956.
8. Andrew Dugan. "In U.S., Smoking Hits New Low at 16%." Gallup. July 24, 2018. <https://news.gallup.com/poll/237908/smoking-rate-hits-new-low.aspx>.
9. Centers for Disease Control and Prevention. "Smoking Leads to Disease and Disability and Harms Nearly Every Organ of the Body." Page last reviewed February 6, 2019. Accessed March 4, 2019. [https://www.cdc.gov/tobacco/data\\_statistics/fact\\_sheets/fast\\_facts/index.htm](https://www.cdc.gov/tobacco/data_statistics/fact_sheets/fast_facts/index.htm).
10. Velicer, C, St Helen G, Glantz SA. "Tobacco Papers and Tobacco Industry Ties in Regulatory Toxicology and Pharmacology." *Journal of Public Health Policy*. Vol. 39, no. 1. (February 2018): 34–48. doi: 10.1057/s41271-017-0096-6.
11. Liu JJ, Bell CM, Matelski JJ, Detsky AS, Cram P. "Payments by US Pharmaceutical and Medical Device Manufacturers to US Medical Journal Editors: Retrospective Observational Study." *BMJ*. Vol. 359, no. j4619. (October 26, 2017). doi: 10.1136/bmj.j4619.
12. Friedman L. "Financial Conflicts of Interest and Study Results in Environmental and Occupational Health Research." *Journal of Occupational and Environmental Medicine*. Vol. 58, no. 3. (March 2016): 238–47. doi: 10.1097/JOM.0000000000000671.

13. George Carlo. "The Latest Reassurance Ruse about Cell Phones and Cancer." *Journal of the Australasian College of Nutritional and Environmental Medicine*. Vol. 26, No. 1. (April, 2007).
14. "A Report on Non-Iodizing Radiation." *Microwave News*. Vol. 26, no. 4. (July, 2006) <https://microwavenews.com/sites/default/files/docs/mwn.7-06.RR.pdf>.
15. Huss A, Egger M, Hug K, Huwiler-Müntener K, Rössli M. "Source of Funding and Results of Studies of Health Effects of Mobile Phone Use: Systematic Review of Experimental Studies." *Ciência & Saúde Coletiva*. Vol. 13, no. 3 (2008). doi: 10.1590/S1413-81232008000300022.
16. Marino AA, Carruba S. "The Effects of Mobile-Phone Electromagnetic Fields on Brain Electrical Activity: A Critical Analysis of the Literature." *Electromagnetic Biology and Medicine*. Vol. 28, no. 3. (2009): 250–274. doi: 10.3109/15368370902918912.
17. Joel M. Moskowitz, "Government Must Inform Us of Cell Phone Risk." SFGate .com. July 25, 2013. <http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2010/04/27/EDMB1D58TC.DTL#ixzz1qAghpiqI>.
18. Panagopoulos DJ. "Comparing DNA Damage Induced by Mobile Telephony and Other Types of Man-Made Electromagnetic Fields." *Mutation Research/Reviews in Mutation Research*. Vol. 781. July–September 2019: 53–62. doi: 10.1016/j.mrrev.2019.03.003.
19. Daroit NB, Visioli F, Magnusson AS, Vieira GR, Rados PV. "Cell Phone Radiation Effects on Cytogenetic Abnormalities of Oral Mucosal Cells." *Brazilian Oral Research*. Vol. 29. (2015): 1–8. doi: 10.1590/1807-3107BOR-2015.vol29.0114.
20. Ibid.
21. D'Silva MH, Swer RT, Anbalagan J, Rajesh B. "Effect of Radiofrequency Radiation Emitted from 2G and 3G Cell Phone on Developing Liver of Chick Embryo - A Comparative Study." *Journal of Clinical and Diagnostic Research for Doctors*. Vol. 11, no. 7. (2017): 5–9. doi: 10.7860/JCDR/2017/26360.10275.
22. Panagopoulos D. "Mobile Telephony Radiation Effects on Insect Ovarian Cells. The Necessity for Real Exposures Bioactivity Assessment. The Key Role of Polarization, and the 'Ion Forced-Oscillation Mechanism.'" In Geddes CD (Ed.), *Microwave Effects on DNA and Proteins*. Springer, 2017.
23. Gevrek F, Aydin D, Ozsoy S, Aygun H, Bicer C. "Inhibition by Egb761 of the Effect of Cellphone Radiation on the Male Reproductive System." *Bratislava Medical Journal*. Vol. 118, no. 11. (2017): 676–683. doi: 10.4149/BLL\_2017\_128.
24. Çetkin M, Demirel C, Kızılkın N, Aksoy N, Erbağcı H. "Evaluation of the Mobile Phone Electromagnetic Radiation on Serum Iron Parameters in Rats." *African Health Sciences*. Vol. 17, no. 1. (2017): 186–189. doi: 10.4314/ahs.v17i1.23.
25. Shahin S, Singh SP, Chaturvedi CM. "Mobile Phone (1800 MHz) Radiation Impairs Female Reproduction in Mice, Mus Musculus, through Stress Induced Inhibition of Ovarian and Uterine Activity." *Reproductive Toxicology*. 73 (October 2017): 41–60. doi: 10.1016/j.reprotox.2017.08.001.
26. Zothansiam, Zosangzuali M, Lalramdinpuii M, Jagetia GC. "Impact of Radiofrequency Radiation on DNA Damage and Antioxidants in Peripheral Blood Lymphocytes of Humans Residing in the Vicinity of Mobile Phone Base

- Stations." *Electromagnetic Biology and Medicine*. Vol. 36, no. 3. (2017): 295–305. doi: 10.1080/15368378.2017.1350584.
27. De Oliveira FM, Carmona AM, Ladeira C. "Is Mobile Phone Radiation Genotoxic? An Analysis of Micronucleus Frequency in Exfoliated Buccal Cells." *Mutation Research*. 822: (October 2017): 41–46. doi: 10.1016/j.mrgentox.2017.08.001.
  28. Kalafatakis F, Bekiaridis-Moschou D, Gkioka E, Tsolaki M. "Mobile Phone Use for 5 Minutes Can Cause Significant Memory Impairment in Humans." *Hellenic Journal of Nuclear Medicine*. Vol. 20 supplement. (September 2017): 146–154.
  29. Schauer I, Mohamad Al-Ali B. "Combined Effects of Varicocele and Cell Phones on Semen and Hormonal Parameters." *Wien Klin Wochenschrift*. Vol. 130, no. 9-10. (2018): 335–340. doi: 10.1007/s00508-017-1277-9.
  30. Akdag M, Dasdag S, Canturk F, Akdag MZ. "Exposure to Non-Ionizing Electromagnetic Fields Emitted from Mobile Phones Induced DNA Damage in Human Ear Canal Hair Follicle Cells." *Electromagnetic Biology and Medicine*. Vol 37, no. 2. (2018): 66–75. doi: 10.1080/15368378.2018.1463246.
  31. Fragopoulou AF, Polyzos A, Papadopoulou MD, Sansone A, Manta AK, Balafas E, Kostomitsopoulos N, Skouroliahou A, Chatgililoglu C, Georgakilas A, Stravopodis DJ, Ferreri C, Thanos D, Margaritis LH. "Hippocampal Lipidome and Transcriptome Profile Alterations Triggered by Acute Exposure of Mice to GSM 1800 MHz Mobile Phone Radiation: An Exploratory Study." *Brain and Behavior*. Vol. 8, no. 6. (June 2018). doi: 10.1002/brb3.1001.
  32. Ahmadi S, Alavi SS, Jadidi M, Ardjmand A. "Exposure to GSM 900-MHz Mobile Radiation Impaired Inhibitory Avoidance Memory Consolidation in Rat: Involvements of Opioidergic and Nitrergic Systems." *Brain Research*. Vol. 1701. (December 15, 2018): 36–45. doi: 10.1016/j.brainres.2018.07.016.
  33. Shahbazi-Gahrouei D, Hashemi-Beni B, Moradi A, Aliakbari M, Shahbazi-Gahrouei S. "Exposure to Global System for Mobile Communication 900 MHz Cellular Phone Radiofrequency Alters Growth, Proliferation and Morphology of Michigan Cancer Foundation-7 Cells and Mesenchymal Stem Cells." *International Journal of Preventive Medicine*. Vol. 9. (June 19, 2018): 51. doi: 10.4103/ijpvm.IJPVM\_75\_17.
  34. Bektas H, Bektas MS, Dasdag S. "Effects of Mobile Phone Exposure on Biochemical Parameters of Cord Blood: A Preliminary Study." *Electromagnetic Biology and Medicine*. Vol. 37, no. 4. (August 29, 2018): 184–191. doi: 10.1080/15368378.2018.1499033.
  35. El-Maleky NF, Ebrahim RH. "Effects of Exposure to Electromagnetic Field from Mobile Phone on Serum Hepcidin and Iron Status in Male Albino Rats." *Electromagnetic Biology and Medicine*. Vol. 38, no. 1. (2019): 66–73. doi: 10.1080/15368378.2018.1531423.
  36. Béres S, Németh Á, Ajtay Z, Kiss I, Németh B, Hejfel L. "Cellular Phone Irradiation of the Head Affects Heart Rate Variability Depending on Inspiration/Expiration Ratio." *In Vivo*. Vol. 32, no. 5. (2018): 1145–1153. doi: 10.21873/in vivo.11357.
  37. Shahabi S, Hassanzadeh Taji I, Hoseinneshadharzi M, Mousavi F, Shirchi S, Nazari A, Zarei H, Pourabdolhossein F. "Exposure to Cell Phone Radiofrequency Changes Corticotrophin Hormone Levels and Histology of the Brain and Adrenal Glands in Male Wistar Rat." *Iranian Journal of Basic Medical Sciences*. Vol. 21, no. 12. (December 2018): 1269–1274. doi: 10.22038/ijbms.2018.29567.7133.

38. CTIA. "Overall Safety of Cell Phones." Cellphone Health Facts. Accessed February 12, 2019. <https://www.wirelesshealthfacts.com/faq/>.
39. Roberts C. "Do I Need to Worry about Radiation From WiFi and Bluetooth Devices?" *Consumer Reports*. March 1, 2018. <https://www.consumerreports.org/radiation/do-i-need-to-worry-about-radiation-from-wifi-and-bluetooth-devices/>.
40. National Toxicology Program. "Cell Phone Radio Frequency Radiation." Accessed February 14, 2019. <https://ntp.niehs.nih.gov/results/areas/cellphones/index.html>.
41. National Institute of Environmental Health Sciences. "NTP Releases Rodent Studies on Cell Phone Radiofrequency Radiation." Environmental Factor. June 2016. <https://factor.niehs.nih.gov/2016/6/science-highlights/cellphones/index.htm>.
42. Broad WJ. "Study of Cellphone Risks Finds 'Some Evidence' of Link to Cancer, at Least in Male Rats." *New York Times*. November 1, 2018. <https://www.nytimes.com/2018/11/01/health/cellphone-radiation-cancer.html>.
43. Knutson R. "Cellphone-Cancer Link Found in Government Study." *Wall Street Journal*. May 28, 2016. <https://www.wsj.com/articles/cellphone-cancer-link-found-in-government-study-1464324146?mg=id-wsj>.
44. "Telecommunications." Cornell Law School's Legal Information Institute. Accessed May 31, 2019. <https://www.law.cornell.edu/uscode/text/47/332>.
45. Norm Alster. *Captured Agency: How the Communications Commission Is Dominated by the Industry It Presumably Regulates*. Edmund J. Safra Institute for Ethics, Harvard University. Cambridge, Massachusetts. 2015.
46. Christopher Ketcham. "Warning: Your Cell Phone May Be Hazardous to Your Health." GQ. January 26 2010. <https://www.gq.com/story/warning-cell-phone-radiation>.
47. Daniel Lathro. "From Government Service to Private Practice: Writers of Telecom Law Move to K Street." Center for Public Integrity. October 28, 2004. <http://www.publicintegrity.org/2004/10/28/6597/government-service-private-practice>.
48. Center for Responsive Politics. "AT&T, Inc: Summary." Open Secrets. Accessed March 4, 2019. <https://www.opensecrets.org/lobby/clientsum.php?id=D000000076&year=2018>.
49. Joel Moskowitz. "Cell Phones, Cell Towers, and Wireless Safety." <https://www.youtube.com/watch?v=AgGRukb7qI4>.
50. Lai H and Singh NP. "Acute Low-Intensity Microwave Exposure Increases DNA Single-Strand Breaks in Rat Brain Cells." *Bioelectromagnetics*. Vol. 16, no. 3. (1995): 207–210. doi: 10.1002/bem.2250160309.
51. "Motorola, Microwaves and DNA Breaks: 'War-Gaming' the Lai-Singh Experiments." *Microwave News*. Vol. 17, no. 1. January/February 1997: 13. <https://microwavenews.com/news/backissues/j-f97issue.pdf>.
52. Frey AH, Feld SR, Frey B. "Neural Function and Behavior: Defining the Relationship." *Annals of the New York Academy of Sciences*. Vol. 247, no. 1. (February 1975): 433–439. <https://nyaspubs.onlinelibrary.wiley.com/doi/abs/10.1111/j.1749-6632.1975.tb36019.x>.
53. Christopher Ketcham. "Warning: Your Cell Phone May Be Hazardous to Your Health." GQ. January 25, 2010. <https://www.gq.com/story/warning-cell-phone-radiation>.

54. Paul Brodeur. *The Zapping of America: Microwaves, Their Deadly Risk and the Cover-Up*. Norton, 1977, p. 74.
55. Norm Alster. *Captured Agency: How the Federal Communications Commission Is Dominated by the Industries It Presumably Regulates*. Edmond J. Safra Center for Ethics, Harvard University. Cambridge, Massachusetts. 2015.
56. Alex Kotch of Sludge. "Revealed: How US Senators Invest in Firms They Are Supposed to Regulate." *The Guardian* and Sludge, an investigative news website focused on money in politics. September 19, 2019. [https://amp.theguardian.com/us-news/2019/sep/19/us-senators-investments-conflict-of-interest?\\_twitter\\_impression=true](https://amp.theguardian.com/us-news/2019/sep/19/us-senators-investments-conflict-of-interest?_twitter_impression=true).
57. Philip Shabecoff. "U.S. Sees Possible Cancer Tie to Electromagnetism." May 23, 1990. <https://www.nytimes.com/1990/05/23/us/us-sees-possible-cancer-tie-to-electromagnetism.html>.
58. "White House Report Argues EMFs Are Not a Public Health Issue." *Microwave News*. Vol. 12, no 6. (November/December 1992.) <https://microwavenews.com/news/backissues/n-d92issue.pdf>.
59. Portier CJ, Wolfe MS, editors. "Assessment of Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields." National Institute of Environmental Health Sciences of the National Institutes of Health. 1998. <http://nirem.fiac.cnr.it/docs/niehs98.pdf>.
60. Yoram Wurmser. "Mobile Time Spent 2018: Will Smartphones Remain Ascendant?" June 18, 2018. <https://www.emarketer.com/content/mobile-time-spent-2018>.
61. Hardell L, Carlberg M, Mild KH. "Pooled Analysis of Case-Control Studies on Malignant Brain Tumours and the Use of Mobile and Cordless Phones Including Living and Deceased Subjects." *International Journal of Oncology*. Vol. 38, no 5. (2011): 1465–1474. doi: 10.3892/ijo.2011.947.
62. Danny Hakim. "At C.D.C., a Debate Behind Recommendations on Cellphone Risk." *New York Times*. January 1, 2016. [https://www.nytimes.com/2016/01/02/technology/at-cdc-a-debate-behind-recommendations-on-cellphone-risk.html?\\_r=3](https://www.nytimes.com/2016/01/02/technology/at-cdc-a-debate-behind-recommendations-on-cellphone-risk.html?_r=3).
63. "International Appeal: Scientists Call for Protection from Non-Ionizing Electromagnetic Field Exposure." EMFScientist.org. <https://www.emfscientist.org/index.php/emf-scientist-appeal>.
64. "ACS Responds to New Study Linking Cell Phone Radiation to Cancer." American Cancer Society. May 27, 2016. <http://pressroom.cancer.org/NTP2016>.
65. Proctor RN. "Tobacco and Health: Expert Witness Report Filed on Behalf of Plaintiffs in: 'The United States of America, Plaintiff, v. Philip Morris, Inc., et al., Defendants,' Civil Action No. 99-CV-02496 (GK)." May 10, 2002. <http://www.columbia.edu/itc/hs/pubhealth/p9740/readings/tobacco-proctor.pdf>.
66. Voosen P. "Hiroshima and Nagasaki Cast Long Shadows Over Radiation Science." *New York Times*. April 11, 2011. <https://archive.nytimes.com/www.nytimes.com/gwire/2011/04/11/11greenwire-hiroshima-and-nagasaki-cast-long-shadows-over-99849.html?pagewanted=all>.
67. Internal Brown & Williamson memo, August 21, 1969. <https://www.industrydocumentslibrary.ucsf.edu/tobacco/docs/#id=qsdw0147>.

## Chapter 4: How EMFs Damage Your Body

1. Gultekin DH, Moeller L. "NMR Imaging of Cell Phone Radiation Absorption in Brain Tissue." *Proceedings of the National Academy of Sciences of the United States of America*. Vol. 110, no. 1. (January 2, 2013): 58–63. doi: 10.1073/pnas.1205598109.
2. Glaser, ZR, Ph.D. "Bibliography of Reported Biological Phenomena ('Effects') and Clinical Manifestations Attributed to Microwave and Radio-Frequency Radiation." Report No. 2, Revised. Naval Medical Research Institute. June 1971.
3. Goldsmith. JR. "Epidemiologic Evidence Relevant to Radar (Microwave) Effects." *Environmental Health Perspectives*. Vol. 105, suppl. 6. (1997): 1579–1587. doi: 10.1289/ehp.97105s61579.
4. Pall ML. "Wi-Fi Is an Important Threat to Human Health." *Environmental Research*. Vol. 164. (July 2018): 405–416. doi: 10.1016/j.envres.2018.01.035.
5. Pall ML. "How to Approach the Challenge of Minimizing Non-Thermal Health Effects of Microwave Radiation from Electrical Devices." *International Journal of Innovative Research in Engineering and Management*. Vol. 2, no. 5. (September 2015): 71–6.
6. Pall, ML. "Electromagnetic Fields Act via Activation of Voltage-Gated Calcium Channels to Produce Beneficial or Adverse Effects." *Journal of Cellular and Molecular Medicine*. Vol. 17, no. 8. (2013): 958–965. doi: 10.1111/jcmm.12088.
7. Piste P, Sayaji D, Avinash M. "Calcium and Its Role in Human Body." *International Journal of Research in Pharmaceutical and Biomedical Science*. Vol. 4. (2012): 2229–3701.
8. Demareux N, Nunes P. "The Role of STIM and ORAI Proteins in Phagocytic Immune Cells." *American Journal of Physiology. Cell Physiology*. Vol. 310, no. 7. (April 2016): C496–C508. doi: 10.1152/ajpcell.00360.2015.
9. Walleczek J. "Electromagnetic Field Effects on Cells of the Immune System: The Role of Calcium Signaling." *FASEB Journal*. Vol. 6, no. 13. (1992): 3177–85. doi: 10.1096/fasebj.6.13.1397839.
10. Pall ML. "Wi-Fi Is an Important Threat to Human Health." *Environmental Research*. Vol. 164. (July 2018): 405–416. doi: 10.1016/j.envres.2018.01.035.
11. Pall ML. "Electromagnetic Fields Act via Activation of Voltage-Gated Calcium Channels to Produce Beneficial or Adverse Effects." *Journal of Cellular and Molecular Medicine*. Vol. 17, no. 8. (August 2013): 958–65. doi: 10.1111/jcmm.12088.
12. Vekaria HJ, et al. "Targeting Mitochondrial Dysfunction in CNS Injury Using Methylene Blue; Still a Magic Bullet?" *Neurochemical International*. Vol. 109. (October 2017): 117–125. doi: 10.1016/j.neuint.2017.04.004.
13. Pall ML. "Electromagnetic Fields Act Similarly in Plants as in Animals: Probable Activation of Calcium Channels via Their Voltage Sensor." *Current Chemical Biology*. Vol. 10, no. 1 (July 2016): 74–82. doi: 10.2174/2212796810666160419160433.
14. Santhosh Kumar S. "Colony Collapse Disorder (CCD) in Honey Bees Caused by EMF Radiation." *Bioinformation*. Vol. 14, no. 9. (December 21, 2018): 521–524. doi: 10.6026/97320630014521.



15. Dariusz Leszcz. "Henry Lai: Cautionary Words on 'Calcium Hypothesis' in the Science of EMF." *Between a Rock and a Hard Place* (blog). June 12, 2019. <https://betweenrockandhardplace.wordpress.com/2019/06/12/henry-lai-cautionary-words-on-calcium-hypothesis-in-the-science-of-emf/>.
16. Cheeseman KH, Slater TF. "An Introduction to Free Radical Biochemistry." *British Medical Bulletin*. Vol. 49, no. 3. (July 1993): 481–93. doi: 10.1093/oxfordjournals.bmb.a072625.
17. Sakihama Y, Maeda M, Hashimoto M, Tahara S, Hashidoko Y. "Beetroot Betalain Inhibits Peroxynitrite-Mediated Tyrosine Nitration and DNA Strand Damage." *Free Radical Research*. Vol. 46, no. 1. (2012): 93–9. doi: 10.3109/10715762.2011.641157.
18. Azizova OA, Panasenکو OM, Vol'nova TV, Vladimirov YA. "Free Radical Lipid Oxidation Affects Cholesterol Transfer Between Lipoproteins and Erythrocytes." *Free Radical Biology & Medicine*. Vol. 7, no. 3. (1989): 251–7. doi: 10.1016/0891-5849(89)90132-9.
19. Lyras L, Perry RH, Perry EK, Ince PG, Jenner A, Jenner P, Halliwell B. "Oxidative Damage to Proteins, Lipids, and DNA in Cortical Brain Regions from Patients with Dementia with Lewy Bodies." *Journal of Neurochemistry*. Vol. 71, no. 1. (July 1998): 302–12. doi: 10.1046/j.1471-4159.1998.71010302.x.
20. Borys J, Maciejczyk M, Antonowicz B, Krękowski A, Sidun J, Domel E, Dąbrowski JR, Ładny JR, Morawska K, Zalewska A. "Glutathione Metabolism, Mitochondria Activity, and Nitrosative Stress in Patients Treated for Mandible Fractures." *Journal of Clinical Medicine*. Vol. 8, no. 1. (January 21, 2019): E127. doi: 10.3390/jcm8010127.
21. Tan DQ, Suda T. "Reactive Oxygen Species and Mitochondrial Homeostasis as Regulators of Stem Cell Fate and Function." *Antioxidants & Redox Signaling*. Vol. 29, no 2. (July 10, 2018): 149–168. doi: 10.1089/ars.2017.7273.
22. Cadet J, Douki T, Ravanat JL. "Oxidatively Generated Base Damage to Cellular DNA." *Free Radical Biology & Medicine*. Vol. 49, no. 1. (July 1, 2010): 9–21. doi: 10.1016/j.freeradbiomed.2010.03.025.
23. Pacher P, Beckman JS, Liaudet L. "Nitric Oxide and Peroxynitrite in Health and Disease." *Physiological Reviews*. Vol. 87, no. 1. (January 2007): 315–424. doi: 10.1152/physrev.00029.2006.
24. Reczek CR, Chandel NS. "ROS-Dependent Signal Transduction." *Current Opinion in Cell Biology*. Vol. 33. (April 2015): 8–13. doi: 10.1016/j.ccb.2014.09.010.
25. *Fat for Fuel*. Dr. Joseph Mercola. Hay House. Carlsbad, California. 2017.
26. Sohal RS, Weindruch R. "Oxidative Stress, Caloric Restriction, and Aging." *Science*. Vol. 273, no. 5271. (July 5, 1996): 59–63. doi: 10.1126/science.273.5271.59.
27. Salminen A, Kauppinen A, Hiltunen M, Kaarniranta K. "Krebs Cycle Intermediates Regulate DNA and Histone Methylation: Epigenetic Impact on the Aging Process." *Ageing Research Reviews*. Vol. 16. (July 2014): 45–65. doi: 10.1016/j.arr.2014.05.004.
28. Consales C, Merla C, Marino C, Benassi B. "Electromagnetic Fields, Oxidative Stress, and Neurodegeneration." *International Journal of Cell Biology*. Vol. 2012. (2012): 683897. doi: 10.1155/2012/683897.



29. Sawyer DT, Valentine J. "How Super Is Superoxide?" *Accounts of Chemical Research*. Vol. 14, no. 12. (December 1, 1981): 393–400.
30. Huie RE, Padmaja S. "The Reaction Rate of Nitric Oxide with Superoxide." *Free Radical Research Communications*. Vol. 18. (1993): 195–199.
31. Yetik-Anacak G, Catravas JD. "Nitric Oxide and the Endothelium: History and Impact on Cardiovascular Disease." *Vascular Pharmacology*. Vol. 45, no. 5. (November 2006): 268–276. doi: 10.1016/j.vph.2006.08.002.
32. Griffith TM, Edwards DH, Davies RL, Harrison TJ, Evans KT. "EDRF Co-ordinates the Behaviour of Vascular Resistance Vessels." *Nature*. Vol. 329. (1987): 442–445. <https://www.nature.com/articles/329442a0>.
33. Hibbs JB Jr. "Synthesis of Nitric Oxide from L-arginine: A Recently Discovered Pathway Induced by Cytokines with Antitumour and Antimicrobial Activities." *Research in Immunology*. Vol. 142, no. 7. (1991): 565–569. doi: 10.1016/0923-2494(91)90103-P.
34. Förstermann U. "Nitric Oxide and Oxidative Stress in Vascular Disease." *Pflügers Archiv: European Journal of Physiology*. Vol. 459, no. 6. (May 2010): 923–39. doi: 10.1007/s00424-010-0808-2.
35. Ziche M, Morbidelli L. "Nitric Oxide and Angiogenesis." *Journal of Neuro-oncology*. Vol. 50, no. 1-2. (October–November 2000): 13–48. doi: 10.1023/a:1006431309841.
36. Fode M, Jensen CFS, Østergren PB. "Sildenafil in Postprostatectomy Erectile Dysfunction (Perspective)." *International Journal of Impotence Research*. Vol. 31, no. 2. (March 2019): 61–64. doi: 10.1038/s41443-018-0102-y.
37. Pacher P, Szabo C. "Role of the Peroxynitrite-Poly(ADP-Ribose) Polymerase Pathway in Human Disease." *American Journal of Pathology*. Vol. 173, no. 1. (July 2008): 2–13. doi: 10.2353/ajpath.2008.080019.
38. Radi R. "Peroxynitrite, a Stealthy Biological Oxidant." *Journal of Biological Chemistry*. Vol. 288, no. 37. (September 13, 2013): 26464–26472. doi: 10.1074/jbc.R113.472936.
39. Beckman JS, Beckman TW, Chen J, Marshall PA, Freeman BA. "Apparent Hydroxyl Radical Production by Peroxynitrite: Implications for Endothelial Injury from Nitric Oxide and Superoxide." *Proceedings of the National Academy of Sciences of the United States of America*. Vol. 87, no. 4. (February 1990): 1620–4. doi: 10.1073/pnas.87.4.1620.
40. Pacher P, Beckman JS, Liaudet L. "Nitric Oxide and Peroxynitrite in Health and Disease." *Physiological Reviews*. Vol. 87, no. 1. (January 2007): 315–424. doi: 10.1152/physrev.00029.2006.
41. Schwarz C, Kratochvil E, Pilger A, Kuster N, Adlkofer F, Rüdiger HW. "Radiofrequency Electromagnetic Fields (UMTS, 1,950 MHz) Induce Genotoxic Effects In Vitro in Human Fibroblasts but not in Lymphocytes." *International Archives of Occupational and Environmental Health*. Vol. 81, no. 6. (May 2008): 755–767. doi: 10.1007/s00420-008-0305-5.
42. Pall MP. "5G: Great Risk for EU, U.S. and International Health! Compelling Evidence for Eight Distinct Types of Great Harm Caused by Electromagnetic Field (EMF) Exposures and the Mechanism that Causes Them." EMF:data. May 17, 2018. <https://www.emfdata.org/en/documentations/detail&id=243>.

43. Lutz J, Adlkofer F. "Objections Against Current Limits for Microwave Radiation." Proceedings of the WFMN07, Chemnitz, Germany. (2007): 119–123. <http://bemri.org/publications/icnirp/112-objections-against-the-current-limits-for-microwave-radiation.html>.
44. Sivani S, Sudarsanam D. "Impacts of Radio-frequency Electromagnetic Field (RF-EMF) from Cell Phone Towers and Wireless Devices on Biosystem and Ecosystem – A Review." *Biology and Medicine*. Vol. 4, no. 4. (2012): 202–16. [http://www.biolmedonline.com/Articles/Vol4\\_4\\_2012/Vol4\\_4\\_202-216\\_BM-8.pdf](http://www.biolmedonline.com/Articles/Vol4_4_2012/Vol4_4_202-216_BM-8.pdf).
45. Cucurachi C, Tamis WL, Vijver MG, Peijnenburg WJ, Bolte JF, de Snoo GR. "A Review of the Ecological Effects of Radiofrequency Electromagnetic Fields (RF-EMF)." *Environment International*. Vol. 51. (2013): 116–40. doi: 10.1038/nature13290.
46. "Busy as a Bee: Pollinators Put Food on the Table." National Resources Defense Council. June, 2015. <https://www.nrdc.org/sites/default/files/bee-deaths-FS.pdf>.
47. Ellis J. "The Honey Bee Crisis." *Outlooks on Pest Management*. Vol. 23, no. 1. (February 2012): 34–40(6). doi: 10.1564/22feb10.
48. "Everything You Should Know About Colony Collapse Disorder and 'Disappearing' Bee Populations." ZME Science. April 3, 2019. <https://geneticliteracyproject.org/2019/04/03/everything-you-should-know-about-colony-collapse-disorder-and-disappearing-bee-populations/>.
49. Odemer R, Odemer F. "Effects of Radiofrequency Electromagnetic Radiation (RF-EMF) on Honey Bee Queen Development and Mating Success." *Science of the Total Environment*. Vol. 661. (April 15, 2019): 553–562. doi: 10.1016/j.scitotenv.2019.01.154.
50. Figueroa LL, Bergey EA. "Bumble Bees (Hymenoptera: Apidae) of Oklahoma: Past and Present Biodiversity." *Journal of the Kansas Entomological Society*. Vol. 88, no. 4. (October 1, 2015): 418–429. doi: 10.2317/0022-8567-88.4.418.
51. Favre D "Mobile Phone Induced Honeybee Worker Piping." *Apidologie*. Vol. 42. (2011): 270–9. <https://link.springer.com/article/10.1007/s13592-011-0016-x>.
52. Sharma VP and Kumar NK. "Changes in Honeybee Behaviour and Biology Under the Influence of Cellphone Radiations." *Current Science*. Vol. 98, no 10. (2010): 1376–8. [https://www.researchgate.net/publication/225187745\\_Changes\\_in\\_honey\\_bee\\_behaviour\\_and\\_biology\\_under\\_the\\_influence\\_of\\_cell\\_phone\\_radiations](https://www.researchgate.net/publication/225187745_Changes_in_honey_bee_behaviour_and_biology_under_the_influence_of_cell_phone_radiations).
53. Kimmel S, Kuhn J, Harst W, Stever H. "Electromagnetic Radiation: Influences on Honeybees (*Apis mellifera*)." *IIAS-InterSymp Conference*. 2007. [https://www.researchgate.net/publication/228510851\\_Electromagnetic\\_Radiation\\_Influences\\_on\\_Honeybees\\_Apis\\_mellifera](https://www.researchgate.net/publication/228510851_Electromagnetic_Radiation_Influences_on_Honeybees_Apis_mellifera).
54. Harst W, Harst JK, Stever H. "Can Electromagnetic Exposure Cause a Change in Behaviour? Studying Possible Non-thermal Influences on Honey Bees – An Approach Within the Framework of Educational Informatics." *Acta Systemica-IIAS International Journal*. Vol 6, no. 1. (2006): 1–6. [http://www.next-up.org/pdf/ICRW\\_Kuhn\\_Landau\\_study.pdf](http://www.next-up.org/pdf/ICRW_Kuhn_Landau_study.pdf).

55. Margaritis LH, Manta AK, Kokkaliaris KD, Schiza D, Alimisis K, Barkas G, Georgiou E, Giannakopoulou O, Kollia I, Kontogianna G, Kourouzidou A, Myari A, Roumelioti F, Skouroliakou A, Sykioti V, Varda G, Xenos K, Ziomas K. "Drosophila Oogenesis as a Biomarker Responding to EMF Sources." *Electromagnetic Biology and Medicine*, vol. 33, no. 3, 2014, pp. 165-89. doi: 10.3109/15368378.2013.800102.
56. Sánchez-Bayo F, Wyckhuys KAG. "Worldwide Decline of the Entomofauna: A Review of its Drivers." *Biological Conservation*. Vol. 232. (2019): 8-27. doi: 10.1016/j.biocon.2019.01.020.
57. Damian Carrington. "Plummeting Insect Numbers 'Threaten Collapse of Nature.'" *The Guardian*. February 10, 2019. <https://www.theguardian.com/environment/2019/feb/10/plummeting-insect-numbers-threaten-collapse-of-nature>.
58. Pall M. "Electromagnetic Fields Act Similarly in Plants as in Animals: Probable Activation of Calcium Channels via Their Voltage Sensor." *Current Chemical Biology*. Vol. 10, no. 1. (2016). doi: 10.2174/2212796810666160419160433.
59. Soran, ML, Stan M, Niinemets Ü, Copolovici L. "Influence of Microwave Frequency Electromagnetic Radiation on Terpene Emission and Content in Aromatic Plants." *Journal of Plant Physiology*. Vol. 171, no. 15. (2014): 1436-43. doi: 0.1016/j.jplph.2014.06.013.
60. Beaubois E, Girard S, Lallechere S, Davies E, Paladian F, Bonnet P, Ledoigt G, Vian A. "Intercellular Communication in Plants: Evidence for Two Rapidly Transmitted Signals Generated in rRspnse to Electromagnetic Field Stimulation in Tomato." *Plant, Cell & Environment*. Vol. 30. (2007): 840-4. doi: 10.1111/j.1365-3040.2007.01669.x
61. Waldmann-Selsam C, Balmori-de la Puente A, Breunig H, Balmori A. "Radiofrequency Radiation Injures Trees Around Mobile Phone Base Stations." *Science of the Total Environment*. Vol. 572. (2016): 554-69. doi: 10.1016/j.scitotenv.2016.08.045.
62. Haggerty K. "Adverse Influence of Radio Frequency Background on Trembling Aspen Seedlings." *International Journal of Forestry Research*. Vol. 2010, no. 836278. (2010). doi: 10.1155/2010/836278.
63. Hलगamuge MN. "Weak Radiofrequency Radiation Exposure from Mobile Phone Radiation on Plants." *Electromagnetic Biology and Medicine*. Vol. 36, no. 2. (2017): 213-235. doi: 10.1080/15368378.2016.1220389.
64. Grimaldi S, Pasquali R, Barbatano L, Lisi A, Santoro N, Serafino A, Pozzi D. "Exposure to a 50Hz Electromagnetic Field Induces Activation of the Epstein-Barr Virus Genome in Latently Infected Human Lymphoid Cells." *Journal of Environmental Pathology, Toxicology, and Oncology*. Vol. 16, no. 2-3. (1997): 205-7.
65. Dietrich Klinghardt. "Electromagnetic Fields: Their Effect on Your Biology and the Development of an Autistic Child." <https://www.youtube.com/watch?v=qMAV-pZMIZs>.
66. Voichuk SI, Podgorskiĭ VS, Gromozova EN. "Effect of Radio-frequency Electromagnetic Radiation on Physiological Features of *Saccharomyces Cerevisiae* Strain UCM Y-517." *Microbiology Journal*. Vol. 66, no. 3. (May-June 2004): 51-57.

67. Hadjiloucas S, Chahal MS, Bowen JW. "Preliminary Results on the Non-thermal Effects of 200-350 GHz Radiation on the Growth Rate of *S. cerevisiae* cells in Microcolonies." *Physics in Medicine and Biology*. Vol. 47, no. 21. (November 7, 2002): 3831-9. doi: 10.1088/0031-9155/47/21/322.
68. Taheri M, Mortazavi SM, Moradi M, Mansouri S, Hatam GR, Nouri F. "Evaluation of the Effect of Radiofrequency Radiation Emitted From Wi-Fi Router and Mobile Phone Simulator on the Antibacterial Susceptibility of Pathogenic Bacteria *Listeria monocytogenes* and *Escherichia coli*. Dose Response." Vol. 15, no. 1. (2017): 1559325816688527. doi: 10.1177/1559325816688527.
69. Hiscock HG, Mouritsen H, Manolopoulos DE, Hore PJ. "Disruption of Magnetic Compass Orientation in Migratory Birds by Radiofrequency Electromagnetic Fields." *Biophysical Journal*. Vol. 113, no. 7. (2017): 1475–1484. doi:10.1016/j.bpj.2017.07.031.
70. Malkemper EP, Eder SHK, Phillips JB, Winklhofer M, Hart V, Burda H. "Magnetoreception in the Wood Mouse (*Apodemus sylvaticus*): Influence of Weak Frequency-modulated Radio Frequency Fields." *Scientific Reports*. Vol. 4, no. 9917. (2015). <https://www.nature.com/articles/srep09917>.
71. Ernst DA, Lohmann, KJ. "Effect of Magnetic Pulses on Caribbean Spiny Lobsters: Implications for Magnetoreception." *Journal of Experimental Biology*. Vol. 219, no. 12. (2016): 1827-32. 2016. doi: 10.1242/jeb.136036.
72. Balmori, A. "Mobile Phone Mast Effects on Common Frog (*Rana temporaria*) Tadpoles." *Electromagnetic Biology and Medicine*. Vol. 29, no. 1-2. (2010): 31-5. doi: 0.3109/15368371003685363.
73. Hillman D, Goeke CL, Moser R. "Electric and Magnetic Fields (EMF) Affect Milk Production and Behavior of Cows; Results Using Shielded Neutral Isolation Transformer." EE 12 International Conference on Production Diseases in Farm Animals, Michigan State University. Published by: Shocking News, 750 Berkshire Lane, East Lansing, Michigan. July 2004. <http://www.electricalpollution.com/documents/Hillman/ShockingNewsV3-072004.pdf>.
74. Nicholls B, Racey PA. "Bats Avoid Radar Installations: Could Electro-magnetic Fields Deter Bats from Colliding with Wind Turbines?" *PLOS One*. Vol. 3, no. e297. (2007). doi: 10.1371/journal.pone.0000297.
75. Morgan LL, Kesari S, Davis DL. "Why Children Absorb More Microwave Radiation Than Adults: The Consequences." *Journal of Microscopy and Ultrastructure*. Vol. 2, no 4. (December 2014): 197–204. doi: 10.1016/j.jmau.2014.06.005.
76. Ibid.
77. Bioelectric Shield. "The Risks of Cellphone Radiation for Children—and How to Protect Them." *Epoch Times*. February 27, 2017. [https://www.theepochtimes.com/the-risks-of-cellphone-radiation-for-children-and-how-to-protect-them-2\\_2223846.html](https://www.theepochtimes.com/the-risks-of-cellphone-radiation-for-children-and-how-to-protect-them-2_2223846.html).
78. Melody Gutierrez, "State Kept Secret Guidelines on Safe Cell Phone Use." SFGate. March 3, 2017. <https://www.sfgate.com/news/article/Judge-may-order-release-of-state-health-report-on-10973430.php>.
79. Gandhi OP, Lazzi G, Furse CM. "Electromagnetic Absorption in the Human Head and Neck for Mobile Telephones at 835 and 1900 MHz." *IEEE Transactions on Microwave Theory and Techniques*. Vol. 44, no. 10. (1996): 1884–1897. doi: 10.1109/22.539947.

80. Gandhi OP, Morgan LL, Augusto de Salles A, Han Y, Herberman RB, Davis DL. "Exposure Limits: The Underestimation of Absorbed Cell Phone Radiation, Especially in Children." *Electromagnetic Biology and Medicine*. (2012): 1–18. doi: 10.3109/15368378.2011.622827.
81. International Agency for Research on Cancer. "Non-Ionizing Radiation, Part 2: Radiofrequency Electromagnetic Fields." Vol. 102. (2013): 44. <https://monographs.iarc.fr/iarc-monographs-on-the-evaluation-of-carcinogenic-risks-to-humans-14/>.
82. Divan HA, Kheifets L, Obel C, Olsen J. "Prenatal and Postnatal Exposure to Cell Phone Use and Behavioral Problems in Children." *Epidemiology*. Vol. 19, no. 4. (July 2008): 523–9. doi: 10.1097/EDE.0b013e318175dd47.
83. Ibid.
84. Divan HA, Kheifets L, Obel C, Olsen J. "Cell Phone Use and Behavioural Problems in Young Children." *Journal of Epidemiology and Community Health*. Vol. 66, no. 6. (June 2012): 524–529. doi: 10.1136/jech.2010.115402.
85. Li D, Ferber JR, Odouli R, Quesenberry, Jr CP. "A Prospective Study of In-Utero Exposure to Magnetic Fields and the Risk of Childhood Obesity." *Scientific Reports*. Vol. 2, no. 540. (2012). <https://www.nature.com/articles/srep00540>.
86. Li D, Chen H, Odouli R. "Maternal Exposure to Magnetic Fields During Pregnancy in Relation to the Risk of Asthma in Offspring." *Archives of Pediatric and Adolescent Medicine*. Vol. 165, no. 10. (October 2011): 945–950. doi: 10.1001/archpediatrics.2011.135.
87. Birks L, Guxens M, Papadopoulou E, Alexander J, Ballester F, Estarlich M, Gallastegi M, Ha M, Haugen M, Huss A, Kheifets L, Lim H, Olsen J, Santa-Marina L, Sudam M, Vermeulen R, Vrijkotte T, Cardis E, Vrijheid M. "Maternal Cell Phone Use During Pregnancy and Child Behavioral Problems in Five Birth Cohorts." *Environment International*. Vol. 104. (July 2017): 122–131. doi: 10.1016/j.envint.2017.03.024.
88. Li DK, Chen H, Ferber JR, Odouli R, Quesenberry C. "Exposure to Magnetic Field Non-Ionizing Radiation and the Risk of Miscarriage: A Prospective Cohort Study." *Scientific Reports*. Vol. 7, no 1. (December 13, 2017): 17541. doi: 10.1038/s41598-017-16623-8.
89. Li DK, Chen H, Odouli R. "Maternal Exposure to Magnetic Fields During Pregnancy in Relation to the Risk of Asthma in Offspring." *Archives of Pediatrics and Adolescent Medicine*. Vol. 165, no. 10. (October 2011): 945–50. doi: 10.1001/archpediatrics.2011.135.
90. Li DK, Ferber JR, Odouli R, Quesenberry CP Jr. "A Prospective Study of In-Utero Exposure to Magnetic Fields and the Risk of Childhood Obesity." *Scientific Reports*. Vol. 2. (July 27, 2012): 540. doi: 10.1038/srep00540.
91. Li DK. "Adverse Fetal and Childhood Health Effect of In-Utero Exposure to Magnetic Fields Non-ionizing Radiation." Division of Research, Kaiser Foundation Research Institute, Kaiser Permanente. Accessed August 15, 2019. <https://www.healthandenvironment.org/docs/De-KunLiSlidesv3.2018-5-9.pdf>.
92. Thomas S, Heinrich S, von Kries R, Radon K. "Exposure to Radio-Frequency Electromagnetic Fields and Behavioural Problems in Bavarian Children and Adolescents." *European Journal of Epidemiology*. Vol. 25, no. 2. (February 2010): 135–141. doi: 10.1007/s10654-009-9408-x.

93. Li DK. "Adverse Fetal and Childhood Health Effect of In-Utero Exposure to Magnetic Fields Non-ionizing Radiation." Division of Research, Kaiser Foundation Research Institute, Kaiser Permanente. Accessed August 15, 2019. <https://www.healthandenvironment.org/docs/De-KunLiSlidesv3.2018-5-9.pdf>.
94. Sage C, Burgio E. "Electromagnetic Fields, Pulsed Radiofrequency Radiation, and Epigenetics: How Wireless Technologies May Affect Childhood Development." *Child Development*. Vol. 89. (2018): 129–136. doi: 10.1111/cdev.12824.
95. Martin Pall. "The Autism Epidemic Is Caused by EMFs, Acting via Calcium Channels and Chemicals Acting via NMDA-Rs." AutismOne Media. June 10, 2015. <https://www.youtube.com/watch?v=yydZZanRJ50>.
96. Breitenkamp AF, Matthes J, Herzig S. "Voltage-Gated Calcium Channels and Autism Spectrum Disorders." *Current Molecular Pharmacology*. Vol. 8, no. 2. (2015): 123. doi: 10.2174/1874467208666150507105235.
97. Golomb, BA. "Diplomats' Mystery Illness and Pulsed Radiofrequency/Microwave Radiation." *Neural Computation*. (September 5, 2018): 1–104. doi: 10.1162/neco\_a\_01133.
98. De Luca C, Chung Sheun Thai J, Raskovic D, Cesareo E, Caccamo D, Trukhanov A, Korkina L. "Metabolic and Genetic Screening of Electromagnetic Hypersensitive Subjects as a Feasible Tool for Diagnostics and Intervention." *Mediators of Inflammation*. Vol. 2014. (April 9, 2014). doi: 10.1155/2014/924184.
99. Lee SS, Kim HR, Kim MS, Park SH, Kim DW. "Influence of Smart Phone Wi-Fi Signals on Adipose-Derived Stem Cells." *Journal of Craniofacial Surgery*. Vol. 25, no. 5. (September 2014): 1902–1907. doi: 10.1097/SCS.0000000000000939.
100. Belyaev IY, Marková E, Hillert L, Malmgren LO, Persson BR. "Microwaves from UMTS/GSM Mobile Phones Induce Long-Lasting Inhibition of 53BP1/gamma-H2AX DNA Repair Foci in Human Lymphocytes." *Bioelectromagnetics*. Vol. 30, no. 2. (February 2009): 129–141. doi: 10.1002/bem.20445.
101. Marková E, Malmgren LO, Belyaev IY. "Microwaves from Mobile Phones Inhibit 53BP1 Focus Formation in Human Stem Cells More Strongly Than in Differentiated Cells: Possible Mechanistic Link to Cancer Risk." *Environmental Health Perspectives*. Vol. 118, no. 3. (March 1, 2010): 394–399. doi: 10.1289/ehp.0900781.
102. Czyz J, Guan K, Zeng Q, Nikolova T, Meister A, Schönborn F, Schuderer J, Kuster N, Wobus AM. "High Frequency Electromagnetic Fields (GSM Signals) Affect Gene Expression Levels in Tumor Suppressor p53-Deficient Embryonic Stem Cells." *Bioelectromagnetics*. Vol. 25, no. 4. (May 2004): 296–307. doi: 10.1002/bem.10199.
103. Xu F, Bai Q, Zhou K, Ma L, Duan J, Zhuang F, Xie C, Li W, Zou P, Zhu C. "Age-Dependent Acute Interference with Stem and Progenitor Cell Proliferation in the Hippocampus after Exposure to 1800 MHz Electromagnetic Radiation." *Electromagnetic Biology and Medicine*. Vol. 36, no. 2. (2017): 213–35. doi: 10.1080/15368378.2016.
104. H. Bhargav, T.M. Srinivasan, S. Varambally, B.N. Gangadhar, P. Koka. "Effect of Mobile Phone-Induced Electromagnetic Field on Brain Hemodynamics and Human Stem Cell Functioning: Possible Mechanistic Link to Cancer Risk and Early Diagnostic Value of Electronphotonic Imaging." *Journal of Stem Cells*. Vol. 10, no. 4. (2015): 287–294. doi: jsc.2015.10.4.287.

105. Odaci E, Bas O, Kaplan S. "Effects of Prenatal Exposure to a 900 MHz Electromagnetic Field on the Dentate Gyrus of Rats: a Stereological and Histopathological Study." *Brain Research*. Vol. 1238 (October 31, 2008): 224–229. doi: 10.1016/j.brainres.2008.08.013.
106. Uchugonova A, Iseman A, Gorjup E, Tempea G, Bückle R, Watanabe W, König K. "Optical Knock Out of Stem Cells with Extremely Ultrashort Femtosecond Laser Pulses." *Journal of Biophotonics*. Vol. 1, no. 6. (2008): 463–469. doi: 10.1002/jbio.200810047.
107. Wang C, Wang X, Zhou H, Dong G, Guan X, Wang L, Xu X, Wang S, Chen P, Peng R, Hu X. "Effects of Microwave Exposure on BM-MSCs Isolated from C57BL/6 Mice." *PLoS One*. Vol. 10, no. 2. (2015): e0117550, doi: 10.1371/journal.pone.0117550.
108. Teven CM, Greives M, Natale RB, Su Y, Luo Q, He BC, Shenaq D, He TC, Reid RR. "Differentiation of Osteoprogenitor Cells Is Induced by High-Frequency Pulsed Electromagnetic Fields." *Journal of Craniofacial Surgery*. Vol. 23, no. 2. (March 2012): 586–593. doi: 10.1097/SCS.0b013e31824cd6de.
109. Xu F, Bai Q, Zhou K, Ma L, Duan J, Zhuang F, Xie C, Li W, Zou P, Zhu C. "Age-Dependent Acute Interference with Stem and Progenitor Cell Proliferation in the Hippocampus After Exposure to 1800 MHz Electromagnetic Radiation." *Electromagnetic Biology and Medicine*. Vol. 36, no. 2. (2017): 213–35. doi: 10.1080/15368378.2016.
110. Bhargav H, Srinivasan TM, Varambally S, Gangadhar BN, Koka P. "Effect of Mobile Phone-Induced Electromagnetic Field on Brain Hemodynamics and Human Stem Cell Functioning: Possible Mechanistic Link to Cancer Risk and Early Diagnostic Value of Electronphotonic Imaging." *Journal of Stem Cells*. Vol. 10, no. 4. (2015): 287–294. doi: jsc.2015.10.4.287.
111. Herbert MR, Sage C. "Autism and EMF? Plausibility of a Pathophysiological Link – Part I." *Pathophysiology*. Vol. 20, no. 3. (2013): 191–209. doi: 10.1016/j.pathophys.2013.08.001.
112. Mariea TJ, Carlo GL. "Wireless Radiation in the Etiology and Treatment of Autism: Clinical Observations and Mechanisms." *Journal of Australasian College of Nutrition and Environmental Medicine*. Vol. 26, no. 2. (2007): 3–7.
113. Thornton I. "Out of Time: A Possible Link Between Mirror Neurons, Autism and Electromagnetic Radiation." *Medical Hypotheses*. Vol. 67, no. 2. (2006): 378–382. doi: 10.1016/j.mehy.2006.01.032.
114. Currenti SA. "Understanding and Determining the Etiology of Autism." *Cellular Molecular Neurobiology*. Vol. 30, no. 2. (March 2010): 161–171. doi: 10.1007/s10571-009-9453-8.
115. Pino-Lopez M, Romero-Ayuso DM. "Parental Occupational Exposures and Autism Spectrum Disorder in Children." *Revista Española de Salud Pública*. Vol. 87. (2013): 73–85. doi: 10.4321/S1135-57272013000100008.
116. Kane RC. "A Possible Association Between Fetal/Neonatal Exposure to Radiofrequency Electromagnetic Radiation and the Increased Frequency of Autism Spectrum Disorders (ASD)." *Medical Hypotheses*. Vol. 62, no. 2. (2004): 195–197. doi: 10.1016/S0306-9877(03)00309-8.
117. Lathe R. "Electromagnetic Radiation and Autism." *E-Journal of Applied Psychology*. Vol. 5. (2009): 11–30. doi: 10.7790/ejap.v5i1.144.



118. Goldworthy A. "How Electromagnetically-induced Cell Leakage May Cause Autism." (2011). [http://electromagnetichealth.org/wp-content/uploads/2011/05/Autism\\_2011\\_b.pdf](http://electromagnetichealth.org/wp-content/uploads/2011/05/Autism_2011_b.pdf).
119. Herbert MR, Sage C. "Autism and EMF? Plausibility of a Pathophysiological Link – Part I." *Pathophysiology*. Vol. 20, no. 3. (2013): 191–209. doi: 10.1016/j.pathophys.2013.08.001.
120. Herbert MR, Sage C. "Autism and EMF? Plausibility of a Pathophysiological Link-Part II." *Pathophysiology*. Vol. 20, no. 3. (June 2013): 211–234. doi: 10.1016/j.pathophys.2013.08.002.
121. Sullivan P. "Understanding Autism." 2013. <https://www.youtube.com/watch?v=muMVAK19GTM>.
122. "Data & Statistics on Autism Spectrum Disorder." Centers for Disease Control and Prevention. Accessed May 30, 2019. <https://www.cdc.gov/ncbddd/autism/data.html>.
123. Kogan MD, Vladutiu CJ, Schieve LA, Ghandour RM, Blumberg SJ, Zablotsky B, Perrin JM, Shattuck P, Kuhlthau KA, Harwood RL, Lu MC. "The Prevalence of Parent-Reported Autism Spectrum Disorder among US Children." *Pediatrics*. Vol. 142, no. 6. (December 2018): e20174161. doi: 10.1542/peds.2017-4161.
124. Katie Singer. "Calming Behavior in Children with Autism and ADHD." The Weston A. Price Foundation. August 22, 2016. <https://www.westonaprice.org/health-topics/childrens-health/calming-behavior-children-autism-adhd/>. Peter Sullivan. "Wireless and EMF Reduction for Autism." Clear Light Ventures. July 31, 2014. <http://www.clearlightventures.com/blog/2014/07/emf-reduction-for-autism.html>.
125. "Autism May Be Linked to Electromagnetic Radiation Levels In Mother's Bedroom During Pregnancy." [Electromagnetichealth.org](http://electromagnetichealth.org/media-stories/#Autism). Accessed May 30 2019. <http://electromagnetichealth.org/media-stories/#Autism>.
126. Adam Popescu. "Keep Your Head Up: How Smartphone Addiction Kills Manners and Moods." *New York Times*. January 25, 2018. <https://www.nytimes.com/2018/01/25/smarter-living/bad-text-posture-neckpain-mood.html>.
127. "The New Normal: Parents, Teens, and Devices around the World." Common Sense Media. Accessed May 30, 2019. <https://www.commonsensemedia.org/research/The-New-Normal-Parents-Teens-and-Devices-Around-the-World>.
128. Vernon L, Modecki KL, Barber BL. "Mobile Phones in the Bedroom: Trajectories of Sleep Habits and Subsequent Adolescent Psychosocial Development." *Child Development*. Vol. 89, no. 1. (January–February 2018): 66–77. doi: 10.1111/cdev.12836.
129. Twenge JM, Joiner TE, Rogers ML, and Martin GN. (2018). "Increases in Depressive Symptoms, Suicide-Related Outcomes, and Suicide Rates among U.S. Adolescents after 2010 and Links to Increased New Media Screen Time." *Clinical Psychological Science*, Vol. 6, no. 1. (2018): 3–17. doi: 10.1177/2167702617723376.
130. Hedegaard H, Curtin SC, Warner M. "Suicide Rates in the United States Continue to Increase." National Center of Health Statistics. NCHS Data Brief. No. 309. June 2018. <https://www.cdc.gov/nchs/products/databriefs/db309.htm>.



131. Anthony Cuthbertson. "iPhones Pose Suicide Risk to Teenagers, Apple Investors Warn." *Newsweek*. January 18, 2018. <http://www.newsweek.com/iphones-pose-suicide-risk-teenagers-apple-investors-warn-773819>.  
Lumb, David. "Kids Are Overusing iPhones, Warn Apple Investors." *Engadget*. January 8, 2018. <https://www.engadget.com/2018/01/08/kids-are-overusing-iphones-warn-two-apple-investors/>.
132. Juli Clover. "How to Use Screen Time in iOS 12." *MacRumors*. September 19, 2018. <https://www.macrumors.com/how-to/how-to-use-screen-time-in-ios-12/>.
133. Alissa J. Rubin and Elian Peltier. "France Bans Smartphones in Schools through 9th Grade. Will It Help Students?" *New York Times*. September 20, 2018. <https://www.nytimes.com/2018/09/20/world/europe/france-smartphones-schools.html>.
134. Mikko Ahonen, "Why Are Some Countries Removing Wi-Fi in Schools and Others Not?" *Wireless Education*. Accessed May 28, 2019. <https://www.wirelesseducation.org/1073-2>.
135. "Worldwide Precautionary Action." *Parents for Safe Technology*. Accessed May 28, 2019. <http://www.parentsforsafetechnology.org/worldwide-countries-taking-action.html>.
136. "Mobile Kids: The Parent, the Child and the Smartphone." Nielsen. February 28, 2017. <https://www.nielsen.com/us/en/insights/news/2017/mobile-kids--the-parent-the-child-and-the-smartphone.html>.  
"The Common Sense Census: Media Use by Kids Age Zero to Eight 2017." *Common Sense Media*. Accessed May 28, 2019. <https://www.common Sense Media.org/research/the-common-sense-census-media-use-by-kids-age-zero-to-eight-2017>.
137. Jacqueline Howard. "When Kids Get Their First Cellphones around the World." *CNN Health*. December 11, 2017. <https://www.cnn.com/2017/12/11/health/cell-phones-for-kids-parenting-without-borders-explainer-intl/>.
138. "Quarter of Children Under Six Have a Smartphone, Study Finds." *The Independent*. April 8, 2018.
139. Monica Anderson and Jingjing Jiang. "Teens, Social Media & Technology 2018." *Pew Research Center*. May 31, 2018. <https://www.pewinternet.org/2018/05/31/teens-social-media-technology-2018/>.

## Chapter 5: EMFs and Disease

1. Landgrebe M, Frick U, Hauser S, Hajak G, Langguth B. "Association of Tinnitus and Electromagnetic Hypersensitivity: Hints for a Shared Pathophysiology?" *PLoS One*. Vol. 4, no. 3. (2009): e5026. doi: 10.1371/journal.pone.0005026.
2. Mayo Clinic. "Tinnitus." *Mayo Clinic*. Accessed March 19, 2019. <https://www.mayoclinic.org/diseases-conditions/tinnitus/symptoms-causes/syc-20350156>.
3. Dobie RA. "A Review of Randomized Clinical Trials in Tinnitus." *Laryngoscope*. Vol. 109, no. 8. (August 1999): 1202–11. doi: 10.1097/00005537-199908000-00004.
4. Nittby H, Grafström G, Tian DP, Malmgren L, Brun A, Persson BR, Salford LG, Eberhardt J. "Cognitive Impairment in Rats after Long-Term Exposure to GSM-900 Mobile Phone Radiation." *Bioelectromagnetics*. Vol. 29, no. 3. (April 2008): 219–232. doi: 10.1002/bem.20386.

5. Krause CM, Pesonen M, Haarala BC, Hamalainen H. "Effects of Pulsed and Continuous Wave 902 MHz Mobile Phone Exposure on Brain Oscillatory Activity during Cognitive Processing." *Bioelectromagnetics*. Vol. 28, no. 4. (May 2007): 296–308. doi: 10.1002/bem.20300.
6. Papageorgiou CC, Nanou ED, Tsiafakis VG, Kapareliotis E, Kontoangelos KA, Capsalis CN, Rabavilas AD, Soldatos CR. "Acute Mobile Phone Effects on Pre-Attentive Operation." *Neuroscience Letters*. Vol. 397, no. 1–2. (April 2006): 99–103. doi: 10.1016/j.neulet.2005.12.001.
7. Maier R, Greter SE, Maier N. "Effects of Pulsed Electromagnetic Fields on Cognitive Processes - a Pilot Study on Pulsed Field Interference with Cognitive Regeneration." *Acta Neurologica Scandinavica*. Vol. 110, no. 1. (July 2004): 46–52. doi: 10.1111/j.1600-0404.2004.00260.x.
8. Hutter HP, Moshammer H, Wallner P, Cartellieri M, Denk-Linnert DM, Katzinger M, Ehrenberger K, Kundi M. "Tinnitus and Mobile Phone Use." *Occupational and Environmental Medicine*. Vol. 67, no. 12. (December 2010): 804–808. doi: 10.1136/oem.2009.048116.
9. Holgers K-M. "Tinnitus in 7-Year-Old Children." *European Journal of Pediatrics*. Vol. 162, no. 4. (April 2003): 276–78. doi: 10.1007/s00431-003-1183-1.
10. Holgers K-M and Juul J. "The Suffering of Tinnitus in Childhood and Adolescence." *International Journal of Audiology*. Vol. 45, no. 5. (May 2006): 267–72. doi: 10.1080/14992020500485668.
11. Bormusov E, Andle U, Sharon N, Schächter L, Lahav A, Dovrat A. "Non-Thermal Electromagnetic Radiation Damage to Lens Epithelium." *Open Ophthalmology Journal*. Vol. 2. (May 21, 2008): 102–106. doi: 10.2174/1874364100802010102.
12. Yu Y, Yao K. "Non-Thermal Cellular Effects of Low-Power Microwave Radiation on the Lens and Lens Epithelial Cells." *Journal of International Medical Research*. Vol. 38, no. 3. (June 2010): 729–736. doi: 10.1177/147323001003800301.
13. Parathath SR, Parathath S, Tsirka SE. "Nitric Oxide Mediates Neurodegeneration and Breakdown of the Blood-Brain Barrier in tPA-Dependent Excitotoxic Injury in Mice." *Journal of Cell Science*. Vol. 119. (January 15, 2006): 339–349. doi: 10.1242/jcs.02734.
14. Salford LG, Brun A, Stureson K, Eberhardt JL, Persson BR. "Permeability of the Blood-Brain Barrier Induced by 915 MHz Electromagnetic Radiation, Continuous Wave and Modulated at 8, 16, 50, and 200 Hz." *Microscopy Research and Technique*. Vol. 27, no. 6. (April 15, 1994): 535–42. doi: 10.1002/jemt.1070270608.
15. Nittby H, Brun A, Eberhardt J, Malmgren L, Persson BR, Salford LG. "Increased Blood-Brain Barrier Permeability in Mammalian Brain 7 Days After Exposure to the Radiation from a GSM-900 Mobile Phone." *Pathophysiology*. Vol. 16, no. 2–3. (August 2009): 103–12. doi: 10.1016/j.pathophys.2009.01.001.
16. Tang J, Zhang Y, Yang L, Chen Q, Tan L, Zuo S, Feng H, Chen Z, Zhu G. "Exposure to 900 MHz Electromagnetic Fields Activates the mdk-1/ERK Pathway and Causes Blood-Brain Barrier Damage and Cognitive Impairment in Rats." *Brain Research*. Vol. 1601. (March 19, 2015): 92–101. doi: 10.1016/j.brainres.2015.01.019.
17. Salford LG, Nittby H, Persson BRR. "Effects of Electromagnetic Fields from Wireless Communication upon the Blood-Brain Barrier." Prepared for the

- BioInitiative Working Group. September 2012. [https://bioinitiative.org/wp-content/uploads/pdfs/sec10\\_2012\\_Effects\\_Electromagnetic\\_Fields\\_Wireless\\_Communication.pdf](https://bioinitiative.org/wp-content/uploads/pdfs/sec10_2012_Effects_Electromagnetic_Fields_Wireless_Communication.pdf).
18. Bagheri Hosseinabadi M, Khanjani N, Ebrahimi MH, Haji B, Abdolahfard M. "The Effect of Chronic Exposure to Extremely Low-Frequency Electromagnetic Fields on Sleep Quality, Stress, Depression and Anxiety." *Electromagnetic Biology and Medicine*. Vol. 38, no. 1. (2019): 96–101. doi: 10.1080/15368378.2018.1545665.
  19. Thomée S. "Mobile Phone Use and Mental Health. A Review of the Research That Takes a Psychological Perspective on Exposure." *International Journal of Environmental Research and Public Health*. Vol. 15, no. 12. (November 29, 2018): E2692. doi: 10.3390/ijerph15122692.
  20. Ibrahim NK, Baharoon BS, Banjar WF, Jar AA, Ashor RM, Aman AA, Al-Ahmadi JR. "Mobile Phone Addiction and Its Relationship to Sleep Quality and Academic Achievement of Medical Students at King Abdulaziz University, Jeddah, Saudi Arabia." *Journal of Research in Health Science*. Vol. 18, no. 3. (August 4, 2018): e00420.
  21. Zhang J, Sumich A, Wang G. "Acute Effects of Radiofrequency Electromagnetic Field Emitted by Mobile Phone on Brain Function." *Bioelectromagnetics*. Vol. 38, no. 5. (July 2017): 329–338. doi: 10.1002/bem.22052.
  22. Matthew Walker. *Why We Sleep: Unlocking the Power of Sleep and Dreams*. Scribner's. New York City. 2018.
  23. Griefahn B, Kunemund C, Blaszkewicz M, Lerchl A, Degen GH. "Effects of Electromagnetic Radiation (Bright Light, Extremely Low-Frequency Magnetic Fields, Infrared Radiation) on the Circadian Rhythm of Melatonin Synthesis, Rectal Temperature, and Heart Rate." *Industrial Health*. Vol. 40, no. 4. (October 2002): 320–7. doi: 10.2486/indhealth.40.320.  
 Reiter RJ. "Electromagnetic Fields and Melatonin Production." *Biomedicine & Pharmacotherapy*. Vol. 47, no. 10. (1993): 439–44.  
 Weydahl A, Sothorn RB, Cornélissen G, Wetterberg L. "Geomagnetic Activity Influences the Melatonin Secretion at Latitude 70° N." *Biomedicine & Pharmacotherapy*. Vol. 55, Supplement 1. (November 11, 2000): s57–s62. doi: 10.1016/S0753-3322(01)90006-X.  
 Burch JB, Reif JS, Yost MG. "Geomagnetic Disturbances Are Associated with Reduced Nocturnal Excretion of a Melatonin Metabolite in Humans." *Neuroscience Letters*. Vol. 266, no. 3. (May 14, 1999): 209–12. doi: 10.1016/s0304-3940(99)00308-0.  
 Reiter RJ. "Melatonin Suppression by Static and Extremely Low Frequency Electromagnetic Fields: Relationship to the Reported Increased Incidence of Cancer." *Review of Environmental Health*. Vol. 10, no. 3–4. (1994): 171–86.
  24. Neil Cherry. "EMF/EMR Reduces Melatonin in Animals and People." September 2, 2002. <https://hdl.handle.net/10182/3906>.
  25. Aynali G, Nazıroğlu M, Çelik Ö, Doğan M, Yarıktaş M, Yasan H. "Modulation of Wireless (2.45 GHz)-Induced Oxidative Toxicity in Laryngotracheal Mucosa of Rat by Melatonin." *European Archives of Oto-Rhino-Laryngology*. Vol. 270, no. 5. (May 2013): 1695–1700. doi: 10.1007/s00405-013-2425-0.
  26. Mortazavi SM, Daiee E, Yazdi A, Khiabani K, Kavousi A, Vazirinejad R, Behnejad B, Ghasemi M, Mood MB. "Mercury Release from Dental Amalgam Restorations after Magnetic Resonance Imaging and Following Mobile Phone Use." *Pakistan Journal of Biological Sciences*. Vol. 11, no. 8. (April 15, 2008): 1142–6. doi:

- 10.3923/pjbs.2008.1142.1146.  
 Paknahad M, Mortazavi SM, Shahidi S, Mortazavi G, Haghani M. "Effect of Radiofrequency Radiation from Wi-Fi Devices on Mercury Release from Amalgam Restorations." *Journal of Environmental Health Science & Engineering*. Vol. 14, no. 12. (December 2016). doi: 10.1186/s40201-016-0253-z.
27. Mortazavi G, Mortazavi SAR, Mehdizadeh AR. "'Triple M' Effect: A Proposed Mechanism to Explain Increased Dental Amalgam Microleakage after Exposure to Radiofrequency Electromagnetic Radiation." *Journal of Biomedical Physics and Engineering*. Vol. 8, no. 1. (March 1, 2018): 141–146.
  28. Hardell L, Carlberg M, Söderqvist F, Mild KH. "Case-Control Study of the Association between Malignant Brain Tumours Diagnosed between 2007 and 2009 and Mobile and Cordless Phone Use." *International Journal of Oncology*. Vol. 43, no. 6. (December 2013): 1833–45. doi: 10.3892/ijo.2013.2111.
  29. Hardell L, Carlberg M, Söderqvist F, Mild KH. "Pooled Analysis of Case-Control Studies on Acoustic Neuroma Diagnosed 1997–2003 and 2007–2009 and Use of Mobile and Cordless Phones." *International Journal of Oncology*. Vol. 43, no. 4. (October 2013): 1036–44. doi: 10.3892/ijo.2013.2025.
  30. Wang Y, Guo X. "Meta-Analysis of Association between Mobile Phone Use and Glioma Risk." *Journal of Cancer Research Therapies*. Vol. 12 supplement. (2016): C298–C300. doi: 10.4103/0973-1482.200759.
  31. Carlberg M, Hardell L. "Evaluation of Mobile Phone and Cordless Phone Use and Glioma Risk Using the Bradford Hill Viewpoints from 1965 on Association or Causation." *BioMed Research International*. (2017): 9218486. doi: 10.1155/2017/9218486.
  32. Hardell L. "Effects of Mobile Phones on Children's and Adolescents' Health: A Commentary." *Child Development*. Vol. 89, no. 1. (January 2018): 137–140. doi: 10.1111/cdev.12831.
  33. Momoli F, Siemiatycki J, McBride ML, Parent ME, Richardson L, Bedard D, Platt R, Vrijheld M, Cardis E, Krewski D. "Probabilistic Multiple-Bias Modelling Applied to the Canadian Data From the INTERPHONE Study of Mobile Phone Use and Risk of Glioma, Meningioma, Acoustic Neuroma, and Parotid Gland Tumors." *American Journal of Epidemiology*. Vol. 186, no. 7. (2017): 885–893.
  34. Hardell L, Carlberg M. "Use of Wireless Phones and Evidence for Increased Risk of Brain Tumors." Prepared for the BioInitiative Working Group. November 2017. [https://bioinitiative.org/wp-content/uploads/2017/11/Hardell-2017-Sec11-Update-Use\\_of\\_Wireless\\_Phones.pdf](https://bioinitiative.org/wp-content/uploads/2017/11/Hardell-2017-Sec11-Update-Use_of_Wireless_Phones.pdf).  
 Hardell L, Carlberg M, Kundi M. "Evidence for Brain Tumors and Acoustic Neuromas." Prepared for the BioInitiative Working Group. July 2007. [https://bioinitiative.org/wp-content/uploads/pdfs/sec11\\_2007\\_Evidence\\_%20Effects\\_Brain\\_Tumors.pdf](https://bioinitiative.org/wp-content/uploads/pdfs/sec11_2007_Evidence_%20Effects_Brain_Tumors.pdf).  
 Hardell L, Carlberg M, Mild KH. "Use of Wireless Phones and Evidence for Increased Risk of Brain Tumors." Prepared for the BioInitiative Working Group. November 2012. [https://bioinitiative.org/wp-content/uploads/pdfs/sec11\\_2012\\_Use\\_of\\_Wireless\\_Phones.pdf](https://bioinitiative.org/wp-content/uploads/pdfs/sec11_2012_Use_of_Wireless_Phones.pdf).  
 Kundi M. "Evidence for Brain Tumors (Epidemiological)." Prepared for the BioInitiative Working Group. September 2012. [https://bioinitiative.org/wp-content/uploads/pdfs/sec11\\_2012\\_Evidence\\_%20Brain\\_Tumors.pdf](https://bioinitiative.org/wp-content/uploads/pdfs/sec11_2012_Evidence_%20Brain_Tumors.pdf).
  35. Nadler DL and Zurbenko IG. "Estimating Cancer Latency Times Using a Weibull Model." *Advances in Epidemiology*. (2014): 746769. doi: 10.1155/2014/746769.

36. American Cancer Society. *Cancer Facts & Figures 2019*. Atlanta. 2019. <https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/annual-cancer-facts-and-figures/2019/cancer-facts-and-figures-2019.pdf>.
37. James V. Grimaldi. "Verizon and AT&T Provided Cell Towers for McCain Ranch." *Washington Post*. October 16, 2008.
38. Morgan LL, Miller AB, Sasco A, Davis DL. "Mobile Phone Radiation Causes Brain Tumors and Should Be Classified as a Probable Human Carcinogen (2A) (Review)." *International Journal of Oncology*. Vol. 46, no. 5. (May 2015): 1865–1871. doi: 10.3892/ijo.2015.2908.  
Bortkiewicz A, Gadzicka E, Szymczak W. "Mobile Phone Use and Risk for Intracranial Tumors and Salivary Gland Tumors – A Meta-Analysis." *International Journal of Occupational Medicine and Environmental Health*. Vol. 30, no. 1. (February 21, 2017): 27–43. doi: 10.13075/ijom.1896.00802.  
Myung SK, Woong J, McDonnell D, Lee YJ, Kazinets G, Cheng C-T, Moskowitz JM. "Mobile Phone Use and Risk of Tumors: A Meta-Analysis." *Journal of Clinical Oncology*. Vol. 27, no. 33. (November 20, 2009): 5565–5572. doi: 10.1200/JCO.2008.21.6366.  
Prasad M, Kathuria P, Nair P, Kumar A, Prasad K. "Mobile Phone Use and Risk of Brain Tumours: A Systematic Review of Association Between Study Quality, Source of Funding, and Research Outcomes." *Neurological Sciences*. Vol. 38, no. 5. (May 2017): 797. doi: 10.1007/s10072-017-2850-8.  
Coureau G, Bouvier G, Lebailly P, Fabbro-Peray P, Gruber A, Leffondre K, Guillamo JS, Loiseau H, Mathoulin-Pélissier S, Salamon R, Baldi I. "Mobile Phone Use and Brain Tumours in the CERENAT Case-Control Study." *Occupational and Environmental Medicine*. Vol. 71, no. 7. (July 2014): 514–522. doi: 10.1136/oemed-2013-101754.
39. Michael Wyde. "NTP Toxicology and Carcinogenicity Studies of Cell Phone Radiofrequency Radiation." National Toxicology Program, National Institute of Environmental Health Sciences. June 8, 2016. [https://ntp.niehs.nih.gov/ntp/research/areas/cellphone/slides\\_bioem\\_wyde.pdf](https://ntp.niehs.nih.gov/ntp/research/areas/cellphone/slides_bioem_wyde.pdf).
40. Yang M, Guo W, Yang C, Tang J, Huang Q, Feng S, Jiang A, Xu X, Jiang G. "Mobile Phone Use and Glioma Risk: A Systematic Review and Meta-Analysis." *PLoS One*. Vol. 12, no. 5. (May 4, 2017): e0175136. doi: 10.1371/journal.pone.0175136.
41. Carlberg M, Hardell L. "Pooled Analysis of Swedish Case-Control Studies during 1997–2003 and 2007–2009 on Meningioma Risk Associated with the Use of Mobile and Cordless Phones." *Oncology Reports*. Vol. 33, no. 6. (June 2015): 3093–3098. doi: 10.3892/or.2015.3930.
42. Hardell L, Carlberg M. "Mobile Phones, Cordless Phones and the Risk for Brain Tumours." *International Journal of Oncology*. Vol. 35, no. 1. (July 2009): 5–17. doi: 10.3892/ijo\_00000307.
43. Hardell L, Carlberg M, Hansson Mild K. "Use of Mobile Phones and Cordless Phones Is Associated with Increased Risk for Glioma and Acoustic Neuroma." *Pathophysiology*. Vol. 20, no. 2. (April 2013): 85–110. doi: 10.1016/j.pathophys.2012.11.001.
44. Hardell L, Carlberg M. "Mobile Phone and Cordless Phone Use and the Risk for Glioma – Analysis of Pooled Case-Control Studies in Sweden, 1997–2003 and 2007–2009." *Pathophysiology*. Vol. 22, no. 1. (March 2015): 1–13.
45. Philips A, Henshaw DL, Lamburn G, O'Carroll MJ. "Brain Tumours: Rise in Glioblastoma Multiforme Incidence in England 1995–2015 Suggests an Adverse

- Environmental or Lifestyle Factor." *Journal of Environmental and Public Health*. Vol. 2018: 1–10. doi: 10.1155/2018/7910754.
- "Incidence of Deadly Brain Tumours in England Doubled between 1995 and 2015." Powerwatch. September 7, 2018. <https://www.powerwatch.org.uk/news/20180709-glioma-increase-paper.pdf>.
46. Sage CL, "Evidence for Breast Cancer Promotion (Melatonin Studies in Cells and Animals)." Report for the BioInitiative Working Group. July 2007. [https://bioinitiative.org/wp-content/uploads/pdfs/sec14\\_2007\\_Evidence\\_For\\_Breast\\_Cancer\\_Promotion.pdf](https://bioinitiative.org/wp-content/uploads/pdfs/sec14_2007_Evidence_For_Breast_Cancer_Promotion.pdf).
  47. West JG, Kapoor NS, Liao SY, Chen JW, Bailey L, Nagourney RA. "Multifocal Breast Cancer in Young Women with Prolonged Contact between Their Breasts and Their Cellular Phones." *Case Reports in Medicine*. Vol. 2013. (2013): 354682. doi: 10.1155/2013/354682.
  48. Balekouzou A, Yin P, Afewerky HK, Bekolo C, Pamatika CM, Nambei SW, Djeintote M, Doui Doumga A, Mossoro-Kpinde CD, Shu C, Yin M, Fu Z, Qing T, Yan M, Zhang J, Chen S, Li H, Xu Z, Koffi B. "Behavioral Risk Factors of Breast Cancer in Bangui of Central African Republic: A Retrospective Case-Control Study." *PLoS One*. Vol. 12, no. 2. (February 8, 2017): e0171154. doi: 10.1371/journal.pone.0171154.
  49. Çiğ B, Nazıroğlu M. "Investigation of the Effects of Distance from Sources on Apoptosis, Oxidative Stress and Cytosolic Calcium Accumulation via TRPV1 Channels Induced by Mobile Phones and Wi-Fi in Breast Cancer Cells." *Biochimica et Biophysica Acta (BBA)—Biomembranes*. Vol. 1848, no. 10, Part B. (October 2015): 2756–65. doi: 10.1016/j.bbame.2015.02.013.
  50. Esmekaya MA, Seyhan N, Kayhan H, Tuysuz MZ, Kurşun AC, Yağcı M. "Investigation of the Effects of 2.1 GHz Microwave Radiation on Mitochondrial Membrane Potential ( $\Delta\Psi$  m), Apoptotic Activity and Cell Viability in Human Breast Fibroblast Cells." *Cell Biochemistry and Biophysics*. Vol. 67, no. 3. (December 2013): 1371–8. doi: 10.1007/s12013-013-9669-6.
  51. Coogan PF, Clapp RW, Newcomb PA, Wenzl TB, Bogdan G, Mittendorf R, Baron JA, Longnecker MP. "Occupational Exposure to 60-Hertz Magnetic Fields and Risk of Breast Cancer in Women." *Epidemiology*. Vol. 7, no. 5. (September 1, 1996): 459–464. doi: 10.1097/00001648-199609000-00001.
  - McElroy JA, Egan KM, Titus-Ernstoff L, Anderson HA, Trentham-Dietz A, Hampton JM, Newcomb PA. "Occupational Exposure to Electromagnetic Field and Breast Cancer Risk in a Large, Population-Based, Case-Control Study in the United States." *Journal of Occupational and Environmental Medicine*. Vol. 49, no. 3. (March 2007): 266–274. doi: 10.1097/JOM.0b013e318032259b.
  - Dosemeci M, Blair A. "Occupational Cancer Mortality Among Women Employed in the Telephone Industry." *Journal of Occupational Medicine*. Vol. 36, no. 11. (1994): 1204–1209. doi: 10.1097/00043764-199411000-00006.
  - Kliukiene J, Tynes T, Andersen A. "Follow-Up of Radio and Telegraph Operators with Exposure to Electromagnetic Fields and Risk of Breast Cancer." *European Journal of Cancer Prevention*. Vol. 12, no. 4. (2003): 301–307. doi: 10.1097/00008469-200308000-00010.
  52. Zhang Y, Lai J, Ruan G, Chen C, Wang DW. "Meta-Analysis of Extremely Low Frequency Electromagnetic Fields and Cancer Risk: a Pooled Analysis of Epidemiologic Studies." *Environment International*. Vol. 88. (March 2016): 36–43. doi: 10.1016/j.envint.2015.12.012.

53. Wertheimer N, Leeper R. "Electrical Wiring Configurations and Childhood Cancer." *American Journal of Epidemiology*. Vol. 109, no 3. (March 1979): 273–284. doi: 10.1093/oxfordjournals.aje.a112681.
54. Savitz DA, Wachtel H, Barnes FA, John EM, Tvrdik JG. "Case-Control Study of Childhood Cancer and Exposure to 60-Hz Magnetic Fields." *American Journal of Epidemiology*. Vol. 128, no. 1. (July 1988): 21–38. doi: 10.1093/oxfordjournals.aje.a114943.
55. Kundi M. "Evidence for Childhood Cancers (Leukemia)." Prepared for the BioInitiative Working Group. September 2012. [https://bioinitiative.org/wp-content/uploads/pdfs/sec12\\_2012\\_Evidence\\_%20Childhood\\_Cancers.pdf](https://bioinitiative.org/wp-content/uploads/pdfs/sec12_2012_Evidence_%20Childhood_Cancers.pdf).
56. World Health Organization. "Extremely Low Frequency Fields." *Environmental Health Criteria No. 238*. (Updated August 4, 2016): 9. [https://www.who.int/peh-emf/publications/elf\\_ehc/en/](https://www.who.int/peh-emf/publications/elf_ehc/en/).
57. Yang Y, Jin X, Yan C, Tian Y, Tang J, Shen X. "Case-Only Study of Interactions between DNA Repair Genes (*hMLH1*, *APEX1*, *MGMT*, *XRCC1* and *XPB*) and Low-Frequency Electromagnetic Fields in Childhood Acute Leukemia." *Leukemia & Lymphoma*. Vol. 49, no. 12. (2008): 2344–2350. doi: 10.1080/10428190802441347.
58. "Faulty DNA Repair May Explain EMF Role in Childhood Leukemia." *Microwave News*. December 15, 2008. <https://microwavenews.com/XRCC1.html>.
59. Mejía-Aranguré JM, Bonilla M, Lorenzana R, Juárez-Ocaña S, de Reyes G, Pérez-Saldivar ML, González-Miranda G, Bernáledes-Ríos R, Ortiz-Fernández A, Ortega-Alvarez M, del Carmen Martínez-García M, Fajardo-Gutiérrez. "Incidence of Leukemias in Children from El Salvador and Mexico City between 1996 and 2000: Population-Based Data." *BMC Cancer*. Vol. 5. (2005): 33. doi: 10.1186/1471-2407-5-33.
60. Mejia-Arangure J, Fajardo-Gutierrez A, Perez-Saldivar M, Gorodezky C, Martinez-Avalos A, Romero-Guzman L, Campo-Martinez M, Flores-Lujano J, Salamanca-Gomez F, Velasquez-Perez L. "Magnetic Fields and Acute Leukemia in Children with Down Syndrome." *Epidemiology*. Vol. 18, no. 1. (January 2007): 158–161. doi: 10.1097/01.ede.0000248186.31452.be.
61. Centers for Disease Control and Prevention. "XRCC1 Allele and Genotype Frequencies." Public Health Genomics. Accessed on March 7, 2019. <https://www.cdc.gov/genomics/population/genvar/frequencies/XRCC1.htm#race>.
62. Dixon RE, Cheng EP, Mercado JL, Santana LF. "L-Type Ca<sup>2+</sup> Channel Function During Timothy Syndrome." *Trends in Cardiovascular Medicine*. Vol. 22, no. 3. (April 2012): 72–76. doi: 10.1016/j.tcm.2012.06.015.  
Hsiao PY, Tien HC, Lo CP, Juang JM, Wang YH, Sung RJ. "Gene Mutations in Cardiac Arrhythmias: A Review of Recent Evidence in Ion Channelopathies." *Applications in Clinical Genetics*. Vol. 6. (January 18, 2013): 1–13. doi: 10.2147/TACG.S29676.  
Tynes T, Hannevik M, Andersen A, Vistnes AI, Haldorsen T. "Incidence of Breast Cancer in Norwegian Female Radio and Telegraph Operators." *Cancer Causes & Control*. Vol. 7, no. 2. (March 1996): 197–204.  
Kliukiene J, Tynes T, Andersen A. "Follow-Up of Radio and Telegraph Operators with Exposure to Electromagnetic Fields and Risk of Breast Cancer." *European*



*Journal of Cancer Prevention*. Vol. 12, no. 4. (August 2003): 301–7. doi: 10.1097/01.cej.0000082602.47188.da.

63. Pall ML. “Microwave Electromagnetic Fields Act by Activating Voltage-Gated Calcium Channels: Why the Current International Safety Standards Do Not Predict Biological Hazard.” *Journal of Cellular and Molecular Medicine*. Vol. 17, no. 8. (August 2013): 958–965. doi: 10.1111/jcmm.12088.
64. Braune S, Wrocklage C, Raczek J, Gailus T, Lücking CH. “Resting Blood Pressure Increase During Exposure to a Radio-Frequency Electromagnetic Field.” *Research Letters*. Vol. 351, no. 9119. (June 20, 1998): 1857–1858. doi: 10.1016/s0140-6736(98)24025-6.
65. John Schieszer. “Researcher: Turn off Cell Phones at BP Visits.” *Renal & Urology News*. May 16, 2013. <https://www.renalandurologynews.com/home/conference-highlights/american-society-of-hypertension/researcher-turn-off-cell-phones-at-bp-visits/>.
66. Pedersen SA, Gaist D, Schmidt SAJ, Hömlich LR, Friis S, Pottegård A. “Hydrochlorothiazide Use and Risk of Nonmelanoma Skin Cancer: A Nationwide Case-Control Study from Denmark.” *Journal of the American Academy of Dermatology*. Vol. 78, no. 4. (April 2018): 673–681. doi: 10.1016/j.jaad.2017.11.042.
67. “Facts & Statistics.” Anxiety and Depression Association of America. Accessed March 7, 2019. <https://adaa.org/about-adaa/press-room/facts-statistics>.
68. Ruscio AM, Hallion LS, Lim CCW, Aguilar-Gaxiola S, Al-Hamzawi A, Alonso J, Andrade LH, Borges G, Bromet EJ, Bunting B, Caldas de Almeida JM, Demyttenaere K, Florescu S, de Girolamo G, Gureje O, Haro JM, He Y, Hinkov H, Hu C, de Jonge P, Karam EG, Lee S, Lepine JP, Levinson D, Mneimneh Z, Navarro-Mateu F, Posada-Villa J, Slade T, Stein DJ, Torres Y, Uda H, Wojtyniak B, Kessler RC, Chatterji S, Scott KM. “Cross-Sectional Comparison of the Epidemiology of DSM-5 Generalized Anxiety Disorder across the Globe.” *JAMA Psychiatry*. Vol. 74, no. 5. (May 1, 2017): 465–475. doi: 10.1001/jamapsychiatry.2017.0056.
69. “Majority of Americans Say They Are Anxious about Health; Millennials Are More Anxious than Baby Boomers.” American Psychiatric Association. May 22, 2017. <https://www.psychiatry.org/newsroom/news-releases/majority-of-americans-say-they-are-anxious-about-health-millennials-are-more-anxious-than-baby-boomers>.
70. “Americans Say They Are More Anxious Than a Year Ago; Baby Boomers Report Greatest Increase in Anxiety.” American Psychiatric Association. May 7, 2018. <https://www.psychiatry.org/newsroom/news-releases/americans-say-they-are-more-anxious-than-a-year-ago-baby-boomers-report-greatest-increase-in-anxiety>.
71. “Major Depression.” National Institute of Mental Health. Updated February 2019. <https://www.nimh.nih.gov/health/statistics/major-depression.shtml>.
72. Söderqvist F, Carlberg M, Hardell L. “Use of Wireless Telephones and Self-Reported Health Symptoms: A Population-Based Study among Swedish Adolescents Aged 15–19 Years.” *Environmental Health*. Vol. 7. (May 2008): 18. doi: 10.1186/1476-069X-7-18.



73. Hyman IE Jr, Sarb BA, Wise-Swanson BM. "Failure to See Money on a Tree: Inattentional Blindness for Objects That Guided Behavior." *Frontiers in Psychology*. Vol. 5. (April 23, 2014): 356. doi: 10.3389/fpsyg.2014.00356.
74. Ward AF, Duke K, Gneezy A, Bos MW. "Brain Drain: The Mere Presence of One's Own Smartphone Reduces Available Cognitive Capacity." *Journal of the Association for Consumer Research*. Vol. 2, no. 2. (April 2017).
75. Kolodynski AA, Kolodynska VV. "Motor and Psychological Functions of School Children Living in the Area of the Skrunda Radio Location Station in Latvia." *Science of the Total Environment*. Vol. 180, no. 1. (February 2, 1996): 87–93.
76. Pall ML. "Microwave Frequency Electromagnetic Fields (EMFs) Produce Widespread Neuropsychiatric Effects Including Depression." *Journal of Chemical Neuroanatomy*. Vol. 75, Part B. (September 2016): 43–51. doi: 10.1016/j.jchemneu.2015.08.001.
77. The research Pall based this statement on includes:  
Berridge MJ. "Neuronal Calcium Signaling." *Neuron*. Vol. 21, no. 1. (July 1998): 13–26. doi: 10.1016/s0896-6273(00)80510-3.  
Dunlap K, Luebke JL, Turner TJ. "Exocytic Ca Channels in the Mammalian Central Nervous System." *Neuroscience*. Vol. 18, no 2. (February 1995): 89–98.  
Wheeler DB, Randall A, Tsien RW. "Roles of N-type and Q-type Channels in Supporting Hippocampal Synaptic Transmission." *Science*. Vol. 264, no. 5155. (April 1, 1994): 107–111. <https://science.sciencemag.org/content/264/5155/107>.
78. Sundberg I, Ramklint M, Stridsberg M, Papadopoulos FC, Ekselius L, Cunningham JL. "Salivary Melatonin in Relation to Depressive Symptom Severity in Young Adults." *PLoS One*. Vol. 11, no. 4. (2016): e0152814. doi: 10.1371/journal.pone.0152814.
79. Oto R, Akdag Z, Dasdag S, Celik Y. "Evaluation of Psychologic Parameters in People Occupationally Exposed to Radiofrequencies and Microwaves." *Biotechnology & Biotechnology Equipment*. Vol. 8, no. 4. (1994): 71–74. doi: 10.1080/13102818.1994.10818812.
80. Thomée S, Härenstam A, Hagberg M. "Mobile Phone Use and Stress, Sleep Disturbances, and Symptoms of Depression Among Young Adults – a Prospective Cohort Study." *BMC Public Health*. Vol. 11. (January 31, 2011): 66. doi: 10.1186/1471-2458-11-66.
81. Glaser, ZR, Ph.D. "Bibliography of Reported Biological Phenomena ('Effects') and Clinical Manifestations Attributed to Microwave and Radio-Frequency Radiation." Report No. 2, Revised. Naval Medical Research Institute. June 1971.
82. Raines JK. "Electromagnetic Field Interactions with the Human Body: Observed Effects and Theories." National Aeronautics and Space Administration. Greenbelt, Maryland. April 9, 1981. <https://ntrs.nasa.gov/search.jsp?R=19810017132>.
83. Bolen SM. "Radiofrequency/Microwave Radiation Biological Effects and Safety Standards: A Review." U.S. Air Force Material Command, Griffiss Air Force Base. New York. 1994. <https://apps.dtic.mil/dtic/tr/fulltext/u2/a282886.pdf>.
84. Pall ML. "Microwave Frequency Electromagnetic Fields (EMFs) Produce Widespread Neuropsychiatric Effects Including Depression." *Journal of Chemical Neuroanatomy*. Vol. 75, Part B. (September 2016): 43–51. doi: 10.1016/j.jchemneu.2015.08.001.

85. Tolgskaya MS, Gordon ZV (Haigh B, Translator). *Pathological Effects of Radio Waves*. Consultants Bureau. New York/London. 1973.
86. Pall, M. "Microwave Frequency Electromagnetic Fields (EMFs) Produce Widespread Neuropsychiatric Effects Including Depression." *Journal of Chemical Neuroanatomy*. Vol. 75, part B. (September 2016): 43–51. doi: 10.1016/j.jchemneu.2015.08.001.
87. Sobel E, Davanipour Z, Sulkava R, Erkinjuntti T, Wikstrom J, Henderson VW, Buckwalter G, Bowman JD, Lee PJ. "Occupations with Exposure to Electromagnetic Fields: A Possible Risk Factor for Alzheimer's Disease." *American Journal of Epidemiology*. Vol. 142, no. 5. (September 1, 1995): 515–24. doi: 10.1093/oxfordjournals.aje.a117669.
- Sobel E, Dunn M, Davanipour Z, Qian Z, Chui HC. "Elevated Risk of Alzheimer's Disease among Workers with Likely Electromagnetic Field Exposure." *Neurology*. Vol. 47, no. 6. (December 1996): 1477–81. doi: 10.1212/wnl.47.6.1477.
- Savitz DA, Loomis DP, Tse CK. "Electrical Occupations and Neurodegenerative Disease: Analysis of U.S. Mortality Data." *Archives of Environmental Health*. Vol. 53, no. 1. (January–February 1998): 71–4. doi: 10.1080/00039899809605691.
- Håkansson N, Gustavsson P, Johansen C, Floderus B. "Neurodegenerative Diseases in Welders and Other Workers Exposed to High Levels of Magnetic Fields." *Epidemiology*. Vol. 14, no. 4. (July 2003): 420–6; discussion 427–8.
- Harmanci H, Emre M, Gurvit H, Bilgic B, Hanagasi H, Gurol E, Sahin H, Tinaz S. "Risk Factors for Alzheimer Disease: A Population-Based Case-Control Study in Istanbul, Turkey." *Alzheimer Disease & Associated Disorders*. Vol. 17, no. 3. (July–September 2003): 139–45.
- Feychting M, Jonsson F, Pedersen NL, Ahlbom A. "Occupational Magnetic Field Exposure and Neurodegenerative Disease." *Epidemiology*. Vol. 14, no. 4. (July 2003): 413–9; discussion 427–8. doi: 10.1097/01.EDE.0000071409.23291.7b.
- Röösli M, Lörtscher M, Egger M, Pfluger D, Schreier N, Lörtscher E, Locher P, Spoerri A, Minder C. "Mortality from Neurodegenerative Disease and Exposure to Extremely Low-Frequency Magnetic Fields: 31 Years of Observations on Swiss Railway Employees." *Neuroepidemiology*. Vol. 28, no. 4. (September 11, 2007): 197–206. doi: 10.1159/000108111.
- Davanipour Z, Tseng CC, Lee PJ, Sobel E. "A Case-Control Study of Occupational Magnetic Field Exposure and Alzheimer's Disease: Results from the California Alzheimer's Disease Diagnosis and Treatment Centers." *BMC Neurology*. Vol. 7. (June 2007): 13. doi: 10.1186/1471-2377-7-13.
- Park RM, Schulte PA, Bowman JD, Walker JT, Bondy SC, Yost MG, Touchstone JA, Dosemeci M. "Potential Occupational Risks for Neurodegenerative Diseases." *American Journal of Industrial Medicine*. Vol. 48, no. 1. (July 2005): 63–77.
88. Huss A, Spoerri A, Egger M, Röösli M. "Residence Near Power Lines and Mortality from Neurodegenerative Diseases: Longitudinal Study of the Swiss Population." *American Journal of Epidemiology*. (November 5, 2008) [Epub ahead of print]. doi: 10.1093/aje/kwn297.
89. Salford LG, Brun AE, Eberhardt JL, Malmgren L, Persson BR. "Nerve Cell Damage in Mammalian Brain after Exposure to Microwaves from GSM Mobile Phones." *Environmental Health Perspectives*. Vol. 111, no. 7. (2003): 881–A408. doi: 10.1289/ehp.6039.
90. Jiang DP, Li J, Zhang J, Xu SL, Kuang F, Lang HY, Wang YF, An GZ, Li JH, Guo GZ. "Electromagnetic Pulse Exposure Induces Overexpression of Beta Amyloid Protein in Rats." *Archives of Medical Research*. Vol. 44, no. 3. (April 2013): 178–184. doi: 10.1016/j.arcmed.2013.03.005.

91. Soto-Gamez A, Quax WJ, Demaria M. "Regulation of Survival Networks in Senescent Cells: From Mechanisms to Interventions." *Journal of Molecular Biology*. Vol. 431, no. 15. (May 31, 2019): 2629-2643. doi: 10.1016/j.jmb.2019.05.036.
92. Pereira BI, Devine OP, Vukmanovic-Stejc M, Chambers ES, Subramanian P, Patel N, Virasami A, Sebire NJ, Kinsler V, Valdovinos A, LeSaux CJ, Passos JF, Antoniou A, Rustin MHA, Campisi J, Akbar AN. "Senescent Cells Evade Immune Clearance via HLA-E-Mediated NK and CD8+ T Cell Inhibition." *Nature Communications*. Vol. 10, no. 1. (2019): 2387. doi: 10.1038/s41467-019-10335-5.
93. Bevington M. "The Prevalence of People with Restricted Access to Work in Man-Made Electromagnetic Environments." *Journal of Environment and Health Science*. Vol. 5. (January 18, 2019.) doi: 10.15436/2378-6841.19.2402.
94. Irigaray P, Caccamo D, Belpomme D. "Oxidative Stress in Electrohypersensitivity Self-Reporting Patients: Results of a Prospective in Vivo Investigation with Comprehensive Molecular Analysis." *International Journal of Molecular Medicine*. Vol. 42, no. 4. (October 2018): 1885–1898. doi: 10.3892/ijmm.2018.3774.
95. EHS & MCS Research and Treatment European Group. "Hypothesis of Common Patho-Physiological Mechanisms Accounting for the Co-Occurrence of EHS and MCS." Accessed April 4, 2019. [http://www.ehs-mcs.org/en/patho-physiological-mechanisms\\_178.html](http://www.ehs-mcs.org/en/patho-physiological-mechanisms_178.html).
96. De Luca C, Chung Sheun Thai J, Raskovic D, Cesareo E, Caccamo D, Trukhanov A, Korkina L. "Metabolic and Genetic Screening of Electromagnetic Hypersensitive Subjects as a Feasible Tool for Diagnostics and Intervention." *Mediators of Inflammation*. Vol. 2014, no. 2. (April 9, 2014). doi: 10.1155/2014/924184.
97. Golomb, BA. "Diplomats' Mystery Illness and Pulsed Radiofrequency/Microwave Radiation." *Neural Computation*. (September 5, 2018): 1–104. doi: 10.1162/neco\_a\_01133.
98. Omura Y, Losco M, Omura AK, Yamamoto S, Ishikawa H, Takeshige C, Shimotsuura Y, Muteki T. "Chronic or Intractable Medical Problems Associated with Prolonged Exposure to Unsuspected Harmful Environmental Electric, Magnetic or Electro-Magnetic Fields Radiating in the Bedroom or Workplace and Their Exacerbation by Intake of Harmful Light and Heavy Metals from Common Sources." *Acupuncture & Electro-Therapeutics Research*. Vol. 16, no. 3–4. (1991): 143–77.
99. Landgrebe M, Frick U, Hauser S, Hajak G, Langguth B. "Association of Tinnitus and Electromagnetic Hypersensitivity: Hints for a Shared Pathophysiology?" *PLoS One*. Vol. 4, no. 3. (March 27, 2009): e5026. doi: 10.1371/journal.pone.0005026.
100. Administrative Appeals Tribunal of Australia. "McDonald and Comcare." Last updated February 28, 2013. <http://www7.austlii.edu.au/cgi-bin/viewdoc/au/cases/cth/aat/2013/105.html>.
101. "Gadget 'Allergy': French Woman Wins Disability Grant." BBC News. August 27, 2015. <https://www.bbc.com/news/technology-34075146>.
102. Scott O'Connell. "Judge Rules in Favor of Southboro School in Wifi Sickness Case." *Worcester Telegram & Gazette*. <https://www.telegram.com/news/20180611/judge-rules-in-favor-of-southboro-school-in-wifi-sickness-case>.
103. Mascarenhas MN, Flaxman SR, Boerma T, Vanderpoel S, Stevens GA. "National,

- Regional, and Global Trends in Infertility Prevalence since 1990: A Systematic Analysis of 277 Health Surveys." *PLoS Medicine*. Vol. 9, no. 12. (December 2012): e1001356. doi: 10.1371/journal.pmed.1001356.
104. Brugh VM, Lipshultz LI. "Male Factor Infertility: Evaluation and Management." *Medical Clinics of North America*. Vol. 88. no. 2. (March 2004): 367–85. doi: 10.1016/S0025-7125(03)00150-0.
  - Hirsh A. "Male Subfertility." *BMJ*. Vol. 327. (2003): 669. doi: 10.1136/bmj.327.7416.669.
  105. Philips A, Philips J. "The Adverse Effects of Electromagnetic Fields on Reproduction." EMFFields.org. (2013). <http://www.powerwatch.org.uk/library/downloads/emf-reproduction-2014-03.pdf>.
  106. Wertheimer N, Leeper E. "Possible Effects of Electric Blankets and Heated Waterbeds on Fetal Development." *Bioelectromagnetics*. Vol. 7, no. 1. (1986): 13–22. doi: 10.1002/bem.2250070103.
  107. Mascarenhas MN, Flaxman SR, Boerma T, Vanderpoel S, Stevens GA. "National, Regional, and Global Trends in Infertility Prevalence Since 1990: A Systematic Analysis of 277 Health Surveys." *PLoS Medicine*. Vol 9, no. 12. (December 2012): e1001356. doi: 10.1371/journal.pmed.1001356.
  108. Carlsen E, Giwercman A, Keiding N, Skakkebaek NE. "Evidence for Decreasing Quality of Semen During Past 50 years." *BMJ*. Vol. 305, no. 6854. (September 12, 1992): 609–613. doi: 10.1136/bmj.305.6854.609.
  109. Gorpichenko I, Nikitin O, Banyra O, Shulyak A. "The Influence of Direct Mobile Phone Radiation on Sperm Quality." *Central European Journal of Urology*. Vol. 67, no. 1. (2014): 65–71. doi: 10.5173/cej.2014.01.art14.
  110. Agarwal A, Deepinder F, Sharma RK, Ranga G, Li J. "Effect of Cell Phone Usage on Semen Analysis in Men Attending Infertility Clinic: An Observational Study." *Fertility and Sterility*. Vol. 89. (2008): 124–128. doi: 10.1016/j.fertnstert.2007.01.166.
  111. Agarwal A, Desai NR, Makker K, Varghese A, Mouradi R, Sabanegh E, Sharma R. "Effects of Radiofrequency Electromagnetic Waves (RF-EMW) from Cellular Phones on Human Ejaculated Semen: An in Vitro Pilot Study." *Fertility and Sterility*. Vol. 92, no. 4. (October 2009): 1318–1325. doi: 10.1016/j.fertnstert.2008.08.022.
  112. Li DK, Yan B, Li Z, Gao E, Miao M, Gong D, Weng X, Ferber JR, Yuan W. "Exposure to Magnetic Fields and the Risk of Poor Sperm Quality." *Reproductive Toxicology*. Vol. 29, no. 1. (January 2010): 86–92. doi: 10.1016/j.reprotox.2009.09.004.
  113. Kesari KK, Agarwal A, Henkel R. "Radiations and Male Fertility." *Reproductive Biology and Endocrinology*. Vol. 16, no. 1. (December 9, 2018): 118. doi: 10.1186/s12958-018-0431-1.
  114. Adams JA, Galloway TS, Mondal D, Esteves SC, Mathews M. "Effect of Mobile Telephones on Sperm Quality: A Systematic Review and Meta-Analysis." *Environment International*. Vol. 70. (September 2014): 106–112. doi: 10.1016/j.envint.2014.04.015.
  - La Vignera S, Condorelli RA, Vicari E, D'Agata R, Calogero AE. "Effects of the

- Exposure to Mobile Phones on Male Reproduction: A Review of the Literature." *Journal of Andrology*. Vol. 33, no. 3. (May–June 2012): 350–6. doi: 10.2164/jandrol.111.014373.
- Desai NR, Kesari KK, Agarwal A. "Pathophysiology of Cell Phone Radiation: Oxidative Stress and Carcinogenesis with Focus on Male Reproductive System." *Reproductive Biology and Endocrinology*. Vol. 7. (October 22, 2009): 114. doi: 10.1186/1477-7827-7-114.
- Dama MS, Bhat MN. "Mobile Phones Affect Multiple Sperm Quality Traits: A Meta-Analysis." *F1000 Research*. Vol. 2. (February 12, 2013): 40. doi: 10.12688/f1000research.2-40.v1.
- Liu K, Li Y, Zhang G, Liu J, Cao J, Ao L, Zhang S. "Association between Mobile Phone Use and Semen Quality: A Systemic Review and Meta-Analysis." *Andrology*. Vol. 2. (2014): 491–501. doi: 10.1111/j.2047-2927.2014.00205.x.
- Houston B, Nixon B, King B, De Iuliis G, Aitken R. "The Effects of Radiofrequency Electromagnetic Radiation on Sperm Function." *Reproduction*. Vol. 152, no. 6. (2016): R263–R276. doi: 10.1530/REP-16-0126.
- La Vignera S, Condorelli RA, Vicari E, D'Agata R, Calogero AE. "Effects of the Exposure to Mobile Phones on Male Reproduction: A Review of the Literature." *Journal of Andrology*. Vol. 33, no. 3. (May–June 2012): 350–6. doi: 10.2164/jandrol.111.014373.
115. Santini SJ, Cordone V, Falone S, Mijit M, Tatone C, Amicarelli F, Di Emidio G. "Role of Mitochondria in the Oxidative Stress Induced by Electromagnetic Fields: Focus on Reproductive Systems." *Oxidative Medicine and Cellular Longevity*. Vol. 2018, no. 3. (November 2018): article ID 5076271. doi: 10.1155/2018/5076271.
  116. Kesari KK, Behari J. "Evidence for Mobile Phone Radiation Exposure Effects on Reproductive Pattern of Male Rats: Role of ROS." *Electromagnetic Biology and Medicine*. Vol. 31, no. 3. (September 2012): 213–22. doi: 10.3109/15368378.2012.700292.
  117. Meena R, Kumari K, Kumar J, Rajamani P, Verma HN, Kesari KK. "Therapeutic Approaches of Melatonin in Microwave Radiations-Induced Oxidative Stress-Mediated Toxicity on Male Fertility Pattern of Wistar Rats." *Electromagnetic Biology and Medicine*. Vol. 33, no. 2. (June 2014): 81–91.
  118. Simon Khalaf and Lali Kesiraju. "U.S. Consumers Time-Spent on Mobile Crosses 5 Hours a Day." *Flurry Analytics Blog*. March 2, 2017. <https://www.flurry.com/blog/post/157921590345/us-consumers-time-spent-on-mobile-crosses-5>.
  119. Xu YQ, Li BH, Cheng HM. "High-Frequency Electromagnetic Field Exposure on Reproductive and Endocrine Functions of Female Workers." [Article in Chinese.] *Zhonghua Lao Dong Wei Sheng Zhi Ye Bing Za Zhi (Chinese Journal of Industrial Hygiene and Occupational Diseases)*. Vol. 26, no. 6. (2008): 332–5.
  120. Wojsiat J, Korczyński J, Borowiecka M, Żbikowska HM. "The Role of Oxidative Stress in Female Infertility and in Vitro Fertilization." [Article in Polish.] *Postępy Higieny i Medycyny Doswiadczalnej*. Vol. 71. (May 9, 2017): 359–366.
  121. Gul A, Çelebi H, Uğraş S. "The Effects of Microwave Emitted by Cellular Phones on Ovarian Follicles in Rats." *Archives of Gynecology and Obstetrics*. Vol. 280. (November 2009): 729–33. doi: 10.1007/s00404-009-0972-9.
  122. Augner C, Hacker GW. "Are People Living Next to Mobile Phone Base Stations More Strained? Relationship of Health Concerns, Self-Estimated Distance to Base Station, and Psychological Parameters." *Indian Journal of Occupational and Environmental Medicine*. Vol. 13, no. 3. (2009): 141–5. doi: 10.4103/0019-5278.58918.

- Augner C, Hacker GW, Oberfeld G, Florian M, Hitzl W, Hutter J, Pauser G. "Effects of Exposure to GSM Mobile Phone Base Station Signals on Salivary Cortisol, Alpha-Amylase, and Immunoglobulin A." *Biomedical and Environmental Sciences*. Vol. 23, no. 3. (June 2010): 199–207. doi: 10.1016/S0895-3988(10)60053-0.
123. Mary Brophy Marcus. "Stress May Diminish a Woman's Fertility, Study Suggests." *HealthDay*. March 24, 2014.  
Lynch CD, Sundaram R, Maisog JM, Sweeney AM, Buck Louis GM.  
"Preconception Stress Increases the Risk of Infertility: Results from a Couple-Based Prospective Cohort Study—the LIFE Study." *Human Reproductive*. Vol. 29, no. 5. (May 2014): 1067–75. doi: 10.1093/humrep/deu032.
124. Li D-K, Chen H, Ferber JR, Odouli R, Quesenberry C. "Exposure to Magnetic Field Non-Ionizing Radiation and the Risk of Miscarriage: A Prospective Cohort Study." *Scientific Reports*. Vol. 7, no. 1. (2017): 17541. doi: 10.1038/s41598-017-16623-8.
125. Li D-K, Odouli R, Wi S, Janevic T, Golditch I, Bracken TD, Senior R, Rankin R, Iriye R. "A Population-Based Prospective Cohort Study of Personal Exposure to Magnetic Fields During Pregnancy and the Risk of Miscarriage." *Epidemiology*. Vol. 13, no. 1. (January 2002): 9–20.  
  
Lee GM, Neutra RR, Hristova L, Yost M, Hiatt RA. "A Nested Case-Control Study of Residential and Personal Magnetic Field Measures and Miscarriages." *Epidemiology*. Vol. 13, no. 1. (January 2002): 21–31.
126. Chen H, Qu Z, Liu W. "Effects of Simulated Mobile Phone Electromagnetic Radiation on Fertilization and Embryo Development." *Fetal and Pediatric Pathology*. Vol. 36, no. 2. (April 2017): 123–9. doi: 10.1080/15513815.2016.1261974.

## Chapter 6: How Do You Repair EMF-Related Damage?

1. Hopp AK, Grüter P, Hottiger MO. "Regulation of Glucose Metabolism by NAD<sup>+</sup> and ADP-Ribosylation." *Cells*. Vol. 8, no. 8. (August 2019): 890. doi: 10.3390/cells8080890.
2. Virág L, Szabo C. "The Therapeutic Potential of Poly(ADP-ribose) Polymerase Inhibitors." *Pharmacological Reviews*. Vol. 54, no. 3. (September 2002): 375–429.
3. Shall S, de Murcia G. "Poly(ADP-ribose) Polymerase-1: What Have We Learned from the Deficient Mouse Model?" *Mutation Research*. Vol. 460, no. 1. (June 30, 2000): 1–15.
4. Alemasova EE, Lavrik OI. "Poly(ADP-ribosyl)ation by PARP1: Reaction Mechanism and Regulatory Proteins." *Nucleic Acids Research*. Vol. 47, no. 8. (February 25, 2019): 3811–3827. doi: 10.1093/nar/gkz120.
5. Schraufstatter IU, Hinshaw DB, Hyslop PA, Spragg RG, Cochrane CG. "Oxidant Injury of Cells. DNA Strand-Breaks Activate Polyadenosine Diphosphate-Ribose Polymerase and Lead to Depletion of Nicotinamide Adenine Dinucleotide." *Journal of Clinical Investigation*. Vol. 77, no. 4. (April 1, 1986): 1312–1320. doi: 10.1172/JCI112436.
6. Bai P. "PARP-1 Inhibition Increases Mitochondrial Metabolism through SIRT1 Activation." *Cell Metabolism*. Vol. 13, no. 4. (April 6, 2011): 461–46.
7. Pirinen E, Cantó C, Jo YS, Morato L, Zhang H, Menzies KJ, Williams EG,

- Mouchiroud L, Moullan N, Hagberg C, Li W, Timmers S, Imhof R, Verbeek J, Pujol A, van Loon B, Viscomi C, Zeviani M, Schrauwen P, Sauve AA, Schoonjans K, Auwerx J. "Pharmacological Inhibition of Poly(ADP-Ribose) Polymerases Improves Fitness and Mitochondrial Function in Skeletal Muscle." *Cell Metabolism*. Vol. 19, no. 6. (June 3, 2014): 1034–41. doi: 10.1016/j.cmet.2014.04.002.
8. Massudi H, Grant R, Braidy N, Guest J, Farnsworth B, Guillemin GJ. "Age-Associated Changes in Oxidative Stress and NAD<sup>+</sup> Metabolism in Human Tissue." *PLoS One*. Vol. 7, no. 7. (2012): e42357.
  9. Braidy N, Guillemin GJ, Mansour H, Chan-Ling T, Poljak A, Grant R. "Age Related Changes in NAD<sup>+</sup> Metabolism, Oxidative Stress, and Sirt1 Activity in Wistar Rats." *PLoS One*. Vol. 6, no. 4. (April 26, 2011): e19194.
  10. Makvandi M, Sellmyer MA, Mach RH. "Inflammation and DNA Damage: Probing Pathways to Cancer and Neurodegeneration." *Drug Discovery Today: Technologies*. Vol. 25. (November 2017): 37–43. doi: 10.1016/j.ddtec.2017.11.001.
  11. Berger, F. "The New Life of a Centenarian: Signalling Functions of NAD(P)." *Trends in Biochemical Sciences*. Vol. 29, no. 3. (2004): 111–118. doi: 10.1016/j.tibs.2004.01.007.
  12. Warburg O, Pyridine CW. "Pyridine, the Hydrogen Transfusing Component of Fermentative Enzymes." *Helvetica Chimica Acta*. Vol. 19. (1936): 79–88.
  13. Sinclair DA, Guarente L. "Unlocking the Secrets of Longevity Genes." *Scientific American*. Vol. 294, no. 3. (March 2006): 48–51, 54–7.
  14. Romani M. "Niacin: An Old Lipid Drug in a New NAD<sup>+</sup> Dress." *Journal of Lipid Research*. Vol. 60, no. 4. (April 2019): 741–746. doi: 10.1194/jlr.S092007.
  15. Braidy N, Berg J, Clement J, Khorshidi F, Poliak A, Javasena T, Grant R, Sachdev P. "Role of NAD<sup>+</sup> and Related Precursors as Therapeutic Targets for Age-Related Degenerative Diseases: Rationale, Biochemistry, Pharmacokinetics, and Outcomes." *Antioxidants & Redox Signal*. Vol. 30, no. 2. (January 10, 2019): 251–294. doi: 10.1089/ars.2017.7269.
  16. Ansari HR, Raghava GP. "Identification of NAD Interacting Residues in Proteins." *BMC Bioinformatics*. Vol. 11. (March 30, 2010): 160.
  17. Placzek S, Schomburg I, Chang A, Jeske L, Ulbrich M, Tillack J, Schomburg D. "BRENDA in 2017: New Perspectives and New Tools in BRENDA." *Nucleic Acids Research*. Vol. 45. (January 4, 2017): D380–D388.
  18. Conze D, Brenner C, Kruger CL. "Safety and Metabolism of Long-Term Administration of NIAGEN (Nicotinamide Riboside Chloride) in a Randomized, Double-Blind, Placebo-Controlled Clinical Trial of Healthy Overweight Adults." *Scientific Reports*. Vol. 9, no. 1. (July 5, 2019): 9772. doi: 10.1038/s41598-019-46120-z.
  19. Canto C, Menzies KJ, and Auwerx J. "NAD(+) Metabolism and the Control of Energy Homeostasis: A Balancing Act Between Mitochondria and the Nucleus." *Cellular Metabolism*. Vol. 22. (2015): 31–53.
  20. Won SJ, Choi BY, Yoo BH, Sohn M, Ying W, Swanson R, Suh SW. "Prevention of Traumatic Brain Injury Induced Neuron Death by Intranasal Delivery of NAD<sup>+</sup>." *Journal of Neurotrauma*. Vol. 29, no. 7. (May 1, 2012): 1401–1409.



21. Zhang M, Ying W. "NAD Deficiency Is a Common Central Pathological Factor of a Number of Diseases and Aging: Mechanisms and Therapeutic Implications." *Antioxidants & Redox Signaling*. (February 7, 2018.)
22. Hosseini L, Vafaei MS, Mahmoudi J, Badalzadeh R. "Nicotinamide Adenine Dinucleotide Emerges as a Therapeutic Target in Aging and Ischemic Conditions." *Biogerontology*. (March 5, 2019). doi: 10.1007/s10522-019-09805.
23. Csiszar A, Tarantini S, Yabluchanskiy A, Balasubramanian P, Kiss T, Farkas E, Baur JA, Ungvari ZL. "Role of Endothelial NAD<sup>+</sup> Deficiency in Age-Related Vascular Dysfunction." *American Journal of Physiology-Heart and Circulatory Physiology*. (2019). doi: 10.1152/ajpheart.00039.2019.
24. Poulos LH, Poulos TL. "Structure-Function Studies on Nitric Oxide Synthases." *Journal of Inorganic Biochemistry*. Vol. 99, no. 1. (January 2005): 293–305.
25. Bradshaw P. "Cytoplasmic and Mitochondrial NADPH-Coupled Redox Systems in the Regulation of Aging." *Nutrients*. Vol. 11, no. 3. (February 27, 2019): 504. doi: 10.3390/nu11030504.
26. Placzek S, Schomburg I, Chang A, Jeske L, Ulbrich M, Tillack J, Schomburg D. "BRENDA in 2017: New Perspectives and New Tools in BRENDA." *Nucleic Acids Research*. Vol. 45. (January 4, 2017): D380–D388.
27. Curtis W, Kemper ML, Miller AL, Pawlosky R, King MT, Veech RL. "Mitigation of Damage from Reactive Oxygen Species and Ionizing Radiation by Ketone Body Esters." In *Ketogenic Diet and Metabolic Therapies: Expanded Roles in Health and Disease*. (Masino SA, ed.). Oxford University Press, Oxford. 2017. Pages 254–270.
28. Harman D. "Free Radical Theory of Aging: An Update: Increasing the Functional Life Span." *Annals of the New York Academy of Sciences*. Vol. 1067. (May 2006): 10–21.
29. LaBaron TW, Laher I, Kura B, Slezak J. "Hydrogen Gas: From Clinical Medicine to an Emerging Ergogenic Molecule for Sports Athletes." *Canadian Journal of Physiology and Pharmacology*. (April 10, 2019.) doi: 10.1139/cjpp-2019-0067.
30. Selman C, McLaren JS, Meyer C, Duncan JS, Redman P, Collins AR, Duthie GG, Speakman JR. "Life-Long Vitamin C Supplementation in Combination with Cold Exposure Does Not Affect Oxidative Damage or Lifespan in Mice, but Decreases Expression of Antioxidant Protection Genes." *Mechanisms of Ageing and Development*. Vol. 127, no. 12. (December 2006): 897–904.
31. Ernst IM, Pallauf K, Bendall JK, Paulsen L, Nikolai S, Huebbe P, Roeder T, Rimbach G. "Vitamin E Supplementation and Lifespan in Model Organisms." *Ageing Research Reviews*. Vol. 12, no. 1. (January 2013): 365–375. doi: 10.1016/j.arr.2012.10.002.
32. Bradshaw P. "Cytoplasmic and Mitochondrial NADPH-Coupled Redox Systems in the Regulation of Aging." *Nutrients*. Vol. 11, no. 3. (February 27, 2019): 504. doi: 10.3390/nu11030504.
33. Zhu XH, Lu M, Lee BY, Ugurbil K, Chen W. "In Vivo NAD Assay Reveals the Intracellular NAD Contents and Redox State in Healthy Human Brain and Their Age Dependences." *Proceedings of the National Academy of Sciences of the United States of America*. Vol. 112, no. 9. (March 3, 2015): 2876–2881.
34. Pollak N, Dolle C, Ziegler M. "The Power to Reduce: Pyridine Nucleotides—Small Molecules with a Multitude of Functions." *Biochemistry Journal*. Vol. 402. (March 1, 2007): 205–218. doi: 10.1042/BJ20061638.



35. Panday A, Sahoo MK, Osorio D, Batra S. "NADPH Oxidases: An Overview from Structure to Innate Immunity-Associated Pathologies." *Cellular & Molecular Immunology*. Vol. 12, no. 1. (January 12, 2015): 5–23. doi: 10.1038/cmi.2014.89.
36. Brandes RP, Kreuzer J. "Vascular NADPH Oxidases: Molecular Mechanisms of Activation." *Cardiovascular Research*. Vol. 65, no. 1. (January 1, 2005): 16–27.
37. Bradshaw P. "Cytoplasmic and Mitochondrial NADPH-Coupled Redox Systems in the Regulation of Aging." *Nutrients*. Vol. 11, no. 3. (February 27, 2019): 504. doi: 10.3390/nu11030504.
38. Pacher P, Beckman JS, Liaudet L. "Nitric Oxide and Peroxynitrite in Health and Disease." *Physiological Reviews*. Vol. 87, no. 1. (January 2007): 315–424.
39. Slezák J, Kura B, Frimmel K, Zálešák M, Ravingerová T, Vicenczová C, Okruhlicová L, Tribulová N. "Preventive and Therapeutic Application of Molecular Hydrogen in Situations with Excessive Production of Free Radicals." *Physiological Research*. Vol. 65, no. 1. (September 19, 2016): S11–S28.
40. Ohta S. "Molecular Hydrogen as a Novel Antioxidant: Overview of the Advantages of Hydrogen for Medical Applications." *Methods in Enzymology*. Vol. 555. (2015): 289–317. doi: 10.1016/bs.mie.2014.11.038.
41. Zhai X, Chen X, Ohta S, and Sun X. "Review and Prospect of the Biomedical Effects of Hydrogen." *Medical Gas Research*. Vol. 4, no 1. (2014): 19. doi: 10.1186/s13618-014-0019-6.
42. Gao Q, Song H, Wang XT, Liang Y, Xi YJ, Gao Y, Guo QJ, LeBaron T, Luo YX, Li SC, Yin X, Shi HS, Ma YX. "Molecular Hydrogen Increases Resilience to Stress in Mice." *Scientific Reports*. Vol. 7, no. 1. (2017): 9625. doi: 10.1038/s41598-017-10362-6.
43. Sato Y, Kajiyama S, Amano A, Kondo Y, Sasaki T, Handa S, Takahashi R, Fukui M, Hasegawa G, Nakamura N, Fujinawa H, Mori T, Ohta M, Obayashi H, Maruyama N, Ishigami A. "Hydrogen-Rich Pure Water Prevents Superoxide Formation in Brain Slices of Vitamin C-Depleted SMP30/GNL Knockout Mice." *Biochemical and Biophysical Research and Communications*. Vol. 375, no. 3. (October 24, 2008): 346–350. doi: 10.1016/j.bbrc.2008.08.020.
44. LeBaron TW, Laher I, Kura B, Slezak J. "Hydrogen Gas: From Clinical Medicine to an Emerging Ergogenic Molecule for Sports Athletes." *Canadian Journal of Physiology and Pharmacology*. Vol. 97, no. 9. (September 2019): 797–807. doi: 10.1139/cjpp-2019-0067.
45. Kang KM, Kang YN, Choi IB, Gu Y, Kawamura T, Toyoda Y, Nakao A. "Effects of Drinking Hydrogen-Rich Water on the Quality of Life of Patients Treated with Radiotherapy for Liver Tumors." *Medical Gas Research*. 2011 Jun 7; 1 (1): 11. doi: 10.1186/2045-9912-1-11.
46. Yang Q, Ji G, Pan R, Zhao Y, Yan P. "Protective Effect of Hydrogen-Rich Water on Liver Function of Colorectal Cancer Patients Treated with mFOLFOX6 Chemotherapy." *Molecular and Clinical Oncology*. Vol. 7, no. 5. (November 2017): 891–896. doi: 10.3892/mco.2017.1409.
47. Batra V, Kislav B. "Mitigation of Gamma-Radiation Induced Abasic Sites in Genomic DNA by Dietary Nicotinamide Supplementation: Metabolic Up-Regulation of NAD<sup>+</sup> Biosynthesis." *Mutation Research/Fundamental and Molecular Mechanisms of Mutagenesis*. Vol. 749, no. 1–2. (2013): 28–38.

- Braidy N, Guillemin GJ, Mansour H, Chan-Ling T, Poljak A, Grant R. "Age Related Changes in NAD<sup>+</sup> Metabolism Oxidative Stress and Sirt1 Activity in Wistar Rats." *PLoS One*. Vol. 6, no. 4. (April 26, 2011): e19194.
48. Sheng C, Chen H, Wang B, Liu T, Hong Y, Shao J, He X, Ma Y, Nie H, Liu N, Xia W, Ying W. "NAD<sup>+</sup> Administration Significantly Attenuates Synchrotron Radiation X-Ray-Induced DNA Damage and Structural Alterations of Rodent Testes." *International Journal of Physiology, Pathophysiology and Pharmacology*. Vol. 4, no. 1. (2012): 1–9.
49. Ma Y, Nie H, Sheng C, Chen H, Wang B, Liu T, Shao J, He X, Zhang T, Zheng C, Xia W, and Ying W. "Roles of Oxidative Stress in Synchrotron Radiation X-Ray-Induced Testicular Damage of Rodents." *International Journal of Physiology Pathophysiology and Pharmacology*. Vol. 4, no. 2. (2012): 108–114.
50. Fessel JP, Oldham W. "Pyridine Dinucleotides from Molecules to Man." *Antioxidants & Redox Signaling*. Vol. 28, no. 3. (January 20, 2018): 180–212.
51. Rajman L, Chwalek K, Sinclair DA. "Therapeutic Potential of NAD-Boosting Molecules: The in Vivo Evidence." *Cellular Metabolism*. Vol. 27, no. 3. (March 6, 2018): 529–547.
52. Erdelyi K, Bakondi E, Gergely P, Szabó C, Virág L. "Pathophysiologic Role of Oxidative Stress-Induced Poly(ADP-ribose) Polymerase-1 Activation: Focus on Cell Death and Transcriptional Regulation." *Cellular and Molecular Life Sciences*. Vol. 62, no. 7–8. (April 2005): 751–759.
53. Clement J, Wong M, Poljak A, Sachdev P, Braidy N. "The Plasma NAD<sup>+</sup> Metabolome Is Dysregulated in 'Normal' Aging." *Rejuvenation Research*. Vol. 22, no. 2. (April 2019): 121–130. doi: 10.1089/rej.2018.2077.
54. Laliotis GP, BizelisI, Rogdakis R. "Comparative Approach of the de novo Fatty Acid Synthesis (Lipogenesis) between Ruminant and Non Ruminant Mammalian Species: From Biochemical Level to the Main Regulatory Lipogenic Genes." *Current Genomics*. Vol. 11, no. 3. (May 2010): 168–183. doi: 10.2174/138920210791110960.
55. Fang EF, Lautrup S, Hou Y, Demarest TG, Croteau DL, Mattson MP, Bohr VA. "NAD(+) in Aging: Molecular Mechanisms and Translational Implications." *Trends in Molecular Medicine*. Vol. 23, no. 10. (October 2017): 899–916. doi: 10.1016/j.molmed.2017.08.001.
56. Katsyuba E, Auwerx J. "Modulating NAD(+) Metabolism, from Bench to Bedside." *EMBO Journal*. Vol. 36, no. 18. (September 15, 2017): 2670–2683. doi: 10.15252/embj.201797135.
57. Rajman L, Chwalek K, Sinclair DA. "Therapeutic Potential of NAD-Boosting Molecules: The in vivo Evidence." *Cellular Metabolism*. Vol. 27, no. 3. (March 6, 2018): 529–547.
58. Yoshino J, Baur JA, Ima SI. "NAD(+) Intermediates: The Biology and Therapeutic Potential of NMN and NR." *Cellular Metabolism*. Vol. 27, no. 3. (March 6, 2018): 513–528.
59. Grant RS, Kapoor V. "Murine Glial Cells Regenerate NAD, After Peroxide-Induced Depletion, Using Either Nicotinic Acid, Nicotinamide, or Quinolinic Acid as Substrates." *Journal of Neurochemistry*. Vol. 70, no. 4. (April 1998): 1759–1763.

60. Elvehjem CA, Madden RJ, Strong FM, Woolley DW. "The Isolation and Identification of the Anti-Black Tongue Factor." *Nutrition Reviews*. Vol. 32, no. 2. (February 1974): 48–50.
61. Mannar V, Hurrell R., editors. *Food Fortification in a Globalized World*. London: Academic Press/Elsevier, 2017.
62. Kirkland JB. "Niacin Status and Treatment-Related Leukemogenesis." *Molecular Cancer Therapeutics*. Vol. 8, no. 4. (April 2009): 725–732.
63. Kirkland JB. "Niacin Status Impacts Chromatin Structure." *Journal of Nutrition*. Vol. 139, no. 12. (December 2009): 2397–2401.
64. Kirkland JB. "Niacin Status and Genomic Instability in Bone Marrow Cells; Mechanisms Favoring the Progression of Leukemogenesis." *Subcellular Biochemistry*. Vol. 56. (2012): 21–3.
65. Kirkland JB. "Niacin Requirements for Genomic Stability." *Mutation Research*. Vol. 733, no. 1–2. (May 1, 2012): 14–20.
66. Menon RM, Gonzalez MA, Adams MH, Tolbert DS, Leu JH, Cefali EA. "Effect of the Rate of Niacin Administration on the Plasma and Urine Pharmacokinetics of Niacin and Its Metabolites." *Journal of Clinical Pharmacology*. Vol. 47, no. 6. (June 2007): 681–68.
67. Peled T. "Nicotinamide, a SIRT1 Inhibitor, Inhibits Differentiation and Facilitates Expansion of Hematopoietic Progenitor Cells with Enhanced Bone Marrow Homing and Engraftment." *Experimental Hematology*. Vol. 40, no. 4. (April 2012): 342–55.
68. Gaikwad A, Long DJ 2nd, Stringer JL, Jaiswal AK. "In Vivo Role of NAD(P) H:Quinone Oxidoreductase 1 (NQO1) in the Regulation of Intracellular Redox State and Accumulation of Abdominal Adipose Tissue." *Journal of Biological Chemistry*. Vol. 276, no. 25. (June 22, 2001): 22559–64.
69. Yaku K, Okabe K, Nakagawa T. "NAD Metabolism: Implications in Aging and Longevity." *Ageing Research Reviews*. Vol. 47. (November 2018): 11–7. doi: 10.1016/j.arr.2018.05.006.
70. Müller F. "Flavin Radicals: Chemistry and Biochemistry." *Free Radical Biology and Medicine*. Vol. 3, no. 3. (1987): 215–30.
71. Garber K. "Biochemistry: A Radical Treatment." *Nature*. Vol. 489. (2012) S4–6.
72. Mathew ST, Bergström P, Hammarsten O. "Repeated Nrf2 Stimulation Using Sulforaphane Protects Fibroblasts from Ionizing Radiation." *Toxicology and Applied Pharmacology*. Vol. 276, no. 3. (May 2014): 188–194.
73. Reisman SA, Lee CY, Meyer CJ, Proksch JW, Sonis ST, Ward KW. "Topical Application of the Synthetic Triterpenoid RTA 408 Protects Mice from Radiation-Induced Dermatitis." *Radiation Research*. Vol. 181, no. 5. (May 2014): 512–520.
74. Iranshahy M, Iranshahi M, Abtahi SR, Karimi G. "The Role of Nuclear Factor Erythroid 2-Related Factor 2 in Hepatoprotective Activity of Natural Products: A Review." *Food and Chemical Toxicology*. Vol. 120. (October 2018): 261–276. doi: 10.1016/j.fct.2018.07.024.
75. O'Connell MA, Hayes JD. "The Keap1/Nrf2 Pathway in Health and Disease: From the Bench to the Clinic." *Biochemical Society Transactions*. Vol. 43. (2015): 687–689.

76. Marik PE, Khangoora V, Rivera R, Hooper MH, Catravas J. "Hydrocortisone, Vitamin C, and Thiamine for the Treatment of Severe Sepsis and Septic Shock: A Retrospective Before-After Study." *Chest*. Vol. 151, no. 6. (June 2017): 1229–1238. doi: 10.1016/j.chest.2016.11.036.
77. Hershey TB, Kahn JM. "State Sepsis Mandates—A New Era for Regulation of Hospital Quality." *New England Journal of Medicine*. Vol. 376, no. 24. (June 15, 2017): 2311–2313. doi: 10.1056/NEJMp1611928.
78. Shin TG, Kim YJ, Ryoo SM, Hwang SY, Jo IJ, Chung SP, Choi SH, Suh GJ, Kim WY. "Early Vitamin C and Thiamine Administration to Patients with Septic Shock in Emergency Departments: Propensity Score-Based Analysis of a Before-and-After Cohort Study." *Journal of Clinical Medicine*. Vol. 8, no. 1. (January 16, 2019): E102. doi: 10.3390/jcm8010102.
79. Balakrishnan M, Gandhi H, Shah K, Pandya H, Patel R, Keshwani S, Yadav N. "Hydrocortisone, Vitamin C and Thiamine for the Treatment of Sepsis and Septic Shock Following Cardiac Surgery." *Indian Journal of Anaesthesia*. Vol. 62, no. 12. (December 2018): 934–939. doi: 10.4103/ija.IJA\_361\_18.
80. Marik PE. "Hydrocortisone, Ascorbic Acid and Thiamine (HAT Therapy) for the Treatment of Sepsis. Focus on Ascorbic Acid." *Nutrients*. Vol. 10, no. 11. (November 14, 2018): E1762. doi: 10.3390/nu10111762.
81. Moskowitz A, Andersen LW, Huang DT, Berg KM, Grossestreuer AV, Marik PE, Sherwin RL, Hou PC, Becker LB, Cocchi MN, Doshi P, Gong J, Sen A, Donnino MW. "Ascorbic Acid, Corticosteroids, and Thiamine in Sepsis: A Review of the Biologic Rationale and the Present State of Clinical Evaluation." *Critical Care*. Vol. 22, no. 1. (October 29, 2018): 283. doi: 10.1186/s13054-018-2217-4.
82. Surh YJ, Kundu JK, Na HK. "Nrf2 as a Master Redox Switch in Turning on the Cellular Signaling Involved in the Induction of Cytoprotective Genes by Some Chemopreventive Phytochemicals." *Planta Medica*. Vol. 74, no. 13. (October 2008): 1526–39.
83. Nakagawa F, Morino K, Ugi S, Ishikado A, Kondo K, Sato D, Konno S, Nemoto K, Kusunoki C, Sekine O, Sunagawa A, Kawamura M, Inoue N, Nishio Y, Maegawa H. "4-Hydroxy Hexenal Derived from Dietary n-3 Polyunsaturated Fatty Acids Induces Anti-Oxidative Enzyme Heme Oxygenase-1 in Multiple Organs." *Biochemical and Biophysical Research Communications*. Vol. 443, no. 3. (2014): 991–996.
84. Kumar H, Kim IS, More SV, Kim BW, Choi DK. "Natural Product-Derived Pharmacological Modulators of Nrf2/ARE Pathway for Chronic Diseases." *Natural Products Reports*. Vol. 31, no. 1. (January 2014): 109–139.
85. Lewis KN, Mele J, Hayes JD, Buffenstein R. "Nrf2, a Guardian of Healthspan and Gatekeeper of Species Longevity." *Integrative and Comparative Biology*. Vol. 50, no. 5. (November 2010): 829–843.
86. Kapeta S, Chondrogianni N, Gonos ES. "Nuclear Erythroid Factor 2-Mediated Proteasome Activation Delays Senescence in Human Fibroblasts." *Journal of Biological Chemistry*. Vol. 285, no. 11. (March 12, 2010): 8171–8184.
87. Jódar L, Mercken EM, Ariza J, Younts C, González-Reyes JA, Alcaín FJ, Burón I, de Cabo R, Villalba JM. "Genetic Deletion of Nrf2 Promotes Immortalization and Decreases Life Span of Murine Embryonic Fibroblasts." *Journals of Gerontology*.

*Series A: Biological Sciences and Medical Sciences.* Vol. 66A, no. 3. (March 2011): 247–256.

88. Takahashi A, Ohtani N, Yamakoshi K, Iida S, Tahara H, Nakayama K, Nakayama KI, Ide T, Saya H, Hara E. "Mitogenic Signalling and the p16INK4a-Rb Pathway Cooperate to Enforce Irreversible Cellular Senescence." *Nature Cell Biology*. Vol. 8, no. 11. (2006): 1291–1297.
89. Gounder SS, Kannan S, Devadoss D, Miller CJ, Whitehead KJ, Odelberg SJ, Firpo MA, Paine R 3rd, Hoidal JR, Abel ED, Rajasekaran NS. "Impaired Transcriptional Activity of Nrf2 in Age-Related Myocardial Oxidative Stress Is Reversible by Moderate Exercise Training." *PLoS One*. Vol. 7, no. 9. (2012): e45697.
90. Pall ML, Levine S. "Nrf2, a Master Regulator of Detoxification and also Antioxidant, Anti-Inflammatory and Other Cytoprotective Mechanisms, Is Raised by Health Promoting Factors." *Sheng Li Xue Bao (Acta Physiologica Sinica)*. Vol. 67, no. 1. (February 25, 2015): 1–18.
91. Pearson KJ, Lewis KN, Price NL, Chang JW, Perez E, Cascajo MV, Tamashiro KL, Poosala S, Csiszar A, Ungvari Z, Kensler TW, Yamamoto M, Egan JM, Longo DL, Ingram DK, Navas P, de Cabo R. "Nrf2 Mediates Cancer Protection but Not Prolongevity Induced by Caloric Restriction." *Proceedings of the National Academy of Sciences of the United States of America*. Vol. 105, no. 7. (2008): 2325–2330.
92. Bishop NA, Guarente L. "Two Neurons Mediate Diet-Restriction-Induced Longevity in *C. Elegans*." *Nature*. Vol. 447, no. 7144. (2007): 545–549.
93. Sykiotis GP, Habeos IG, Samuelson AV, Bohmann D. "The Role of the Antioxidant and Longevity-Promoting Nrf2 Pathway in Metabolic Regulation." *Current Opinions in Clinical Nutrition and Metabolic Care*. Vol. 14, no. 1. (January 2011): 41–48.
94. Martín-Montalvo A, Villalba JM, Navas P, de Cabo R. "NRF2, Cancer and Calorie Restriction." *Oncogene*. Vol. 30, no. 5. (February 3, 2011): 505–520.
95. Ungvari Z, Parrado-Fernandez C, Csiszar A, de Cabo R. "Mechanisms Underlying Caloric Restriction and Lifespan Regulation: Implications for Vascular Aging." *Circulation Research*. Vol. 102, no. 5. (March 14, 2008): 519–528.
96. Lei P, Tian S, Teng C, Huang L, Liu X, Wang J, Zhang Y, Li B, Shan Y. "Sulforaphane Improves Lipid Metabolism by Enhancing Mitochondrial Function and Biogenesis in Vivo and In Vitro." *Molecular Nutrition & Food Research*. Vol. 63, no. 4. (February 2019): e1800795. doi: 10.1002/mnfr.201800795.
97. Huang DD, et al "Nrf2 Deficiency Exacerbates Frailty and Sarcopenia by Impairing Skeletal Muscle Mitochondrial Biogenesis and Dynamics in an Age-Dependent Manner." *Experimental Gerontology*. Vol. 119. (January 25, 2019): 617–3. doi: 10.1016/j.exger.2019.01.022.
98. Piechota-Polanczyk A, Kopacz A, Kloska D, Zgrapan B, Neumayer C, Grochot-Przeczek A, Huk I, Brostjan C, Dulak J, Jozkowicz A. "Simvastatin Treatment Upregulates HO-1 in Patients with Abdominal Aortic Aneurysm but Independently of Nrf2." *Oxidative Medicine and Cellular Longevity*. Vol. 2018, no. 28. (March 2018.) doi: 10.1155/2018/2028936.
99. Smith RE, Tran K, Smith CC, McDonald M, Shejwalkar P, Hara K "The Role of the Nrf2/ARE Antioxidant System in Preventing Cardiovascular Diseases." *Oxidative*

- Medicine and Cellular Longevity*. Vol. 4, no. 4. (December 2016): 34.
100. Jang HJ, Hong EM, Kim M, Kim JH, Jang J, Park SW, Byun HW, Koh DH, Choi MH, Kae SH, Lee J. "Simvastatin Induces Heme Oxygenase-1 via NF-E2-Related Factor 2 (Nrf2) Activation through ERK and PI3K/Akt Pathway in Colon Cancer." *Oncotarget*. Vol. 7, no. 29. (July 19, 2016): 46219-46229. doi: 10.18632/oncotarget.10078.
  101. Leonardo CC, Doré S. "Dietary Flavonoids Are Neuroprotective through Nrf2-Coordinated Induction of Endogenous Cytoprotective Proteins." *Nutritional Neuroscience*. Vol. 14, no. 5. (September 2011): 226-236. doi: 10.1179/1476830511Y.0000000013.
  102. Kumar H, Kim IS, More SV, Kim BW, Choi DK. "Natural Product-Derived Pharmacological Modulators of Nrf2/ARE Pathway for Chronic Disease." *Natural Products Reports*. Vol. 31, no. 1. (January 2014): 109-139.
  103. Baird L, Dinkova-Kostova AT. "The Cytoprotective Role of the Keap1-Nrf2 Pathway." *Archives of Toxicology*. Vol. 85, no. 4. (April 2011): 241-272.
  104. Gao B, Doan A, Hybertson BM. "The Clinical Potential of Nrf2 Signaling in Degenerative and Immunological Disorders." *Journal of Clinical Pharmacology*. Vol. 6. (2014): 19-34.
  105. Sandberg M, Patil J, D'Angelo B, Weber SG, Mallard C. "NRF2-Regulation in Brain Health and Disease: Implication of Cerebral Inflammation." *Neuropharmacology*. Vol. 79. (2014): 298-306. doi: 10.1016/j.neuropharm.2013.11.004.
  106. Seo HA, Lee IK. "The Role of Nrf2: Adipocyte Differentiation, Obesity, and Insulin Resistance." *Oxidative Medicine and Cellular Longevity*. Vol. 2013. (2013): 184598.
  107. Pedruzzi LM, Stockler-Pinto MB, Leite M Jr., Mafra D. "Nrf2-keap1 System Versus NF-κB: The Good and the Evil in Chronic Kidney Disease?" *Biochimie*. Vol. 94, no. 12. (December 2012): 2461-2466. doi: 10.1016/j.biochi.2012.07.015.
  108. Smolarek AK, So JY, Thomas PE, Lee HJ, Paul S, Dombrowski A, Wang CX, Saw CL, Khor TO, Kong AN, Reuhl K, Lee MJ, Yang CS, Suh N. "Dietary Tocopherols Inhibit Cell Proliferation, Regulate Expression of ERα, PPARγ, and Nrf2, and Decrease Serum Inflammatory Markers During the Development of Mammary Hyperplasia." *Molecular Carcinogenesis*. Vol. 52. (2013): 514-525. doi: 10.1002/mc.21886.
  109. Chen L, Yang R, Qiao W, Zhang W, Chen J, Mao L, Goltzman D, Miao D. "1,25-Dihydroxyvitamin D Exerts an Antiaging Role by Activation of Nrf2-Antioxidant Signaling and Inactivation of p16/p53-Senescence Signaling." *Aging Cell*. Vol. 18. (March 24, 2019): e 12951. doi: 10.1111/acer.12951.
  110. Chen H, Xie K, Han H, Li Y, Liu L, Yang T, Yu Y. "Molecular Hydrogen Protects Mice Against Polymicrobial Sepsis by Ameliorating Endothelial Dysfunction via an Nrf2/HO-1 Signaling Pathway." *International Immunopharmacology*. Vol. 28, no. 1. (September 2015): 643-54.
  111. Yu J, Zhang W, Zhang R, Jiang G, Tang H, Ruan X, Ren P, Lu B. "Molecular Hydrogen Attenuates Hypoxia/Reoxygenation Injury of Intrahepatic Cholangiocytes by Activating Nrf2 Expression." *Toxicology Letters*. Vol. 238, no. 3. (November 4, 2015): 11-9. doi: 10.1016/j.toxlet.2015.08.010.

112. Kawamura T, Wakabayashi N, Shigemura N, Huang CS, Masutani K, Tanaka Y, Noda K, Peng X, Takahashi T, Billiri TR, Okumura M, Toyoda Y, Kensler TW, Nakao A. "Hydrogen Gas Reduces Hyperoxic Lung Injury via the Nrf2 Pathway in Vivo." *American Journal of Physiology-Lung Cellular and Molecular Physiology*. Vol. 304, no. 10. (May 15, 2013): L646–L656. doi: 10.1152/ajplung.00164.2012.
113. Huang C, Wu J, Chen D, Jin J, Wu Y, Chen Z. "Effects of Sulforaphane in the Central Nervous System." *European Journal of Pharmacology*. Vol. 853. (June 15, 2019): 153–168. doi: 10.1016/j.ejphar.2019.03.010.
114. Singh S, Dubey V, Meena A, Siddiqui L, Maruya AK, Luqman S. "Rutin Restricts Hydrogen Peroxide-Induced Alterations by Up-Regulating the Redox-System: An in Vitro, in Vivo and in Silico Study." *European Journal of Pharmacology*. Vol. 835. (July 31, 2018): 115–125. doi: 10.1016/j.ejphar.2018.07.055.
115. Tian R. "Rutin Ameliorates Diabetic Neuropathy by Lowering Plasma Glucose and Decreasing Oxidative Stress via Nrf2 Signaling Pathway in Rats." *European Journal of Pharmacology*. Vol. 771. (January 15, 2016): 84–92. doi: 10.1016/j.ejphar.2015.12.021.
116. Chaiprasongsuk A, Onkoksoong T, Pluemsamran T, Limsaengurai S, Panich U. "Photoprotection by Dietary Phenolics against Melanogenesis through Nrf2-Dependent Antioxidant Responses." *Redox Biology*. Vol. 8. (August 2016): 79–90. doi: 10.1016/j.redox.2015.12.006.
117. Lee YJ, Lee DM, Lee SH. "Nrf2 Expression and Apoptosis in Quercetin-Treated Malignant Mesothelioma Cells" *Molecules and Cells*. Vol. 38, no. 5. (May 31, 2015): 416–425. doi: 10.14348/molcells.2015.2268.
118. Sun GY, Chen Z, Jasmer KJ, Chuang DY, Gu Z, Hannink M, Simonyi A. "Quercetin Attenuates Inflammatory Responses in BV-2 Microglial Cells: Role of MAPKs on the Nrf2 Pathway and Induction of Heme Oxygenase-1." *PLoS One*. Vol. 10, no. 10. (October 27, 2015): e0141509. doi: 10.1371/journal.pone.0141509.
119. Jin Y, Huang ZL, Li L, Yang Y, Wang CH, Wang ZT, Ji LL. "Quercetin Attenuates Toosendanin-Induced Hepatotoxicity through Inducing the Nrf2/GCL/GSH Antioxidant Signaling Pathway." *Acta Pharmacologica Sinica*. Vol. 40, no. 1. (January 2019): 75–85. doi: 10.1038/s41401-018-0024-8.
120. Miltonprabu S, Tomczyk M, Skalicka-Wóznia K, Rastrelli L, Daglia M, Nabavi SF, Alavian SM, Nabavi SM. "Hepatoprotective Effect of Quercetin: From Chemistry to Medicine." *Food and Chemical Toxicology*. Vol. 108, Part B. (October 2017): 365–374. doi: 10.1016/j.fct.2016.08.034.
121. Iranshahy M, Iranshahi M, Abtahi SR, Karimi G. "The Role of Nuclear Factor Erythroid 2-Related Factor 2 in Hepatoprotective Activity of Natural Products: A Review." *Food and Chemical Toxicology*. Vol. 120. (October 2018): 261–276. doi: 10.1016/j.fct.2018.07.024.
122. Lu C, Zhang F, Xu W, Wu X, Lian N, Jin H, Chen Q, Chen L, Shao J, Wu L, Lu Y, Zheng S. "Curcumin Attenuates Ethanol-Induced Hepatic Steatosis through Modulating Nrf2/FXR Signaling in Hepatocytes." *IUBMB Life*. Vol. 67, no. 8. (August 2015 Aug): 645–58. doi: 10.1002/iub.1409.
123. Chen B, Zhang Y, Wang Y, Rao J, Jiang X, Xu Z. "Curcumin Inhibits Proliferation of Breast Cancer Cells through Nrf2-Mediated Down-Regulation of Fen1 Expression." *Journal of Steroid Biochemistry and Molecular Biology*. Vol. 143. (September 2014): 11–8. doi: 10.1016/j.jsbmb.2014.01.009.



124. Zhang H, Zheng W, Feng X, Yang F, Qin H, Wu S, Hou DX, Chen J. "Nrf2–ARE Signaling Acts as Master Pathway for the Cellular Antioxidant Activity of Fisetin." *Molecules*. Vol. 24, no. 4. (2018): 708. doi: 10.3390/molecules24040708.
125. Elshaer M, Chen Y, Wang XJ, Tang X. "Resveratrol: An Overview of Its Anti-Cancer Mechanisms." *Life Sciences*. Vol. 207. (August 15, 2018): 340–349. doi: 10.1016/j.lfs.2018.06.028.
126. Cheng L, Jin Z, Zhao R, Ren K, Deng C, Yu S. "Resveratrol Attenuates Inflammation and Oxidative Stress Induced by Myocardial Ischemia-Reperfusion Injury: Role of Nrf2/ARE Pathway." *International Journal of Clinical and Experimental Medicine*. Vol. 8, no. 7. (2015): 10420–10428.
127. Singh B, Shoulson R, Chatterjee A, Ronghe A, Bhat NK, Dim DC, Bhat HK. "Resveratrol Inhibits Estrogen-Induced Breast Carcinogenesis through Induction of NRF2-Mediated Protective Pathways." *Carcinogenesis*. 2014 Aug; 35 (8): 1872–1880. doi: 10.1093/carcin/bgu120.
128. Kanzaki H, Shinohara F, Itohiya-Kasuya K, Ishikawa M, Nakamura Y. "Nrf2 Activation Attenuates Both Orthodontic Tooth Movement and Relapse." *Journal of Dental Research*. Vol. 94, no. 6. (June 2015): 787–94. doi: 10.1177/0022034515577814.  
Kanlaya R, Khamchun S, Kapincharanon C, Thongboonkerd V. "Protective Epigallocatechin-3-Gallate (EGCG) via Nrf2 Pathway against Oxalate-Induced Epithelial Mesenchymal Transition (EMT) of Renal Tubular Cells." *Scientific Reports*. Vol. 6. (2016): 30233. doi: 10.1038/srep30233.
129. Wang D, Wang Y, Wan X, Yang CS, Zhang J. "Green Tea Polyphenol (-)-Epigallocatechin-3-Gallate Triggered Hepatotoxicity in Mice: Responses of Major Antioxidant Enzymes and the Nrf2 Rescue Pathway." *Toxicology and Applied Pharmacology*. Vol. 283, no. 1. (February 15, 2015): 65–74. doi: 10.1016/j.taap.2014.12.018.
130. Ibid.
131. Massini L, Rico D, Martin-Diana A, Barry-Ryan C. "Valorisation of Apple Peels." *European Journal of Food Research & Review*. Vol. 3, no. 1. (2013): 1–15. doi: 10.21427/D7R32T.
132. Shoji T, Akazome Y, Kanda T, Ikeda M. "The Toxicology and Safety of Apple Polyphenol Extract." *Food and Chemical Toxicology*. Vol. 42, no. 6. (2004): 959–967.
133. Li Y, Guo C, Yang J, Wei J, Xu J, Cheng S. "Evaluation of Antioxidant Properties of Pomegranate Peel Extract in Comparison with Pomegranate Pulp Extract." *Food Chemistry*. Vol. 96, no. 2. (2006): 254–260. doi: 10.1016/j.foodchem.2005.02.033.
134. Zhai X, Zhu C, Zhang Y, Sun J, Alim A, Yang X. "Chemical Characteristics, Antioxidant Capacities and Hepatoprotection of Polysaccharides from Pomegranate Peel." *Carbohydrate Polymers*. Vol. 202. (December 15, 2018): 461–469. doi: 10.1016/j.carbpol.2018.09.013.
135. Imperatori F, Barlozzari G, Scardigli A, Romani A, Macri G, Polinori N, Bernin R, Santi L. "Leishmanicidal Activity of Green Tea Leaves and Pomegranate Peel Extracts on *L. infantum*." *Natural Products Research*. (June 4, 2018): 1–7. doi: 10.1080/14786419.2018.1481841.



136. Ho CY, Cheng YT, Chau CF, Yen GC. "Effect of Diallyl Sulfide on in Vitro and in Vivo Nrf2-Mediated Pulmonic Antioxidant Enzyme Expression via Activation ERK/p38 Signaling Pathway." *Journal of Agricultural and Food Chemistry*. Vol. 60. (2012): 100–107. doi: 10.1021/jf203800d.
137. Colín-González AL, Santana RA, Silva-Islas CA, Cháñez-Cárdenas ME, Santamaría A, Maldonado PD. "The Antioxidant Mechanisms Underlying the Aged Garlic Extract and S-Allylcysteine-Induced Protection." *Oxidative Medicine and Cellular Longevity*. Vol. 2012, no. 3. (May 2012): 907162. doi: 10.1155/2012/907162.
138. Hsieh TC, Elangovan S, Wu JM. "Differential Suppression of Proliferation in MCF-7 and MDA-MB-231 Breast Cancer Cells Exposed to Alpha-, Gamma- and Delta-Tocotrienols Is Accompanied by Altered Expression of Oxidative Stress Modulatory Enzymes." *Anticancer Research*. Vol. 30. (2010): 4169–4176.
139. Sontag TJ, Parker RS. "Influence of Major Structural Features of Tocopherols and Tocotrienols on Their Omega-Oxidation by Tocopherol-Omega-Hydroxylase." *Journal of Lipid Research*. Vol. 48, no. 5. (May 2007): 1090–1098.
140. Esatbeyoglu T, Rodriguez-Werner M, Schlösser A, Winterhalter P, Rimbach G. "Fractionation, Enzyme Inhibitory and Cellular Antioxidant Activity of Bioactives from Purple Sweet Potato (*Ipomoea Batatas*)." *Food Chemistry*. Vol. 221. (April 15, 2017): 447–456. doi: 10.1016/j.foodchem.2016.10.077.
141. Hwang YP, Choi JH, Choi JM, Chung YC, Jeong HG. "Protective Mechanisms of Anthocyanins from Purple Sweet Potato Against Tert-Butyl Hydroperoxide-Induced Hepatotoxicity." *Food and Chemical Toxicology*. Vol. 49, no. 9. (September 2011): 2081–9. doi: 10.1016/j.fct.2011.05.021.
142. Hwang YP, Choi JH, Yun HJ, Han EH, Kim HG, Kim JY, Park BH, Khanal T, Choi JM, Chung YC, Jeong HG. "Anthocyanins from Purple Sweet Potato Attenuate Dimethylnitrosamine-Induced Liver Injury in Rats by Inducing Nrf2-Mediated Antioxidant Enzymes and Reducing COX-2 and iNOS Expression." *Food and Chemical Toxicology*. Vol. 49, no. 1. (January, 2011): 93–9. doi: 10.1016/j.fct.2010.10.002.
143. Wu Q, Wang HD, Zhang X, Yu Q, Li W, Zhou ML, Wang XL. "Astaxanthin Activates Nuclear Factor Erythroid-Related Factor 2 and the Antioxidant Responsive Element (Nrf2-ARE) Pathway in the Brain after Subarachnoid Hemorrhage in Rats and Attenuates Early Brain Injury." *Marine Drugs*. Vol. 12, no. 12. (December 2014): 6125–6141. doi: 10.3390/md12126125.
144. Saw CL, Yang AY, Guo Y, Kong AN. "Astaxanthin and Omega-3 Fatty Acids Individually and in Combination Protect Against Oxidative Stress via the Nrf2-ARE Pathway." *Food and Chemical Toxicology*. Vol. 62. (December 2013): 869–75. doi: 10.1016/j.fct.2013.10.023.
145. Feng Y, Chu A, Luo Q, Wu M, Shi X, Chen Y. "The Protective Effect of Astaxanthin on Cognitive Function via Inhibition of Oxidative Stress and Inflammation in the Brains of Chronic T2DM Rats." *Frontiers in Pharmacology*. Vol. 9. (July 2018): 748. doi: 10.3389/fphar.2018.00748.
146. Saito H. "Toxico-Pharmacological Perspective of the Nrf2- Keap1 Defense System against Oxidative Stress in Kidney Diseases." *Biochemical Pharmacology*. Vol. 85, no. 7. (April 2013): 865–872. doi: 10.1016/j.bcp.2013.01.006.

147. Pedruzzi LM, Stockler-Pinto MB, Leite M Jr, Mafra D. "Nrf2-keap1 System Versus NF- $\kappa$ B: The Good and the Evil in Chronic Kidney Disease?" *Biochimie*. Vol. 94, no. 12. (December 2012): 2461–2466. doi: 10.1016/j.biochi.2012.07.015.
148. Loboda A, Rojczyk-Golebiewska E, Bednarczyk-Cwynar B, Lucjusz Z, Jozkowicz A, Dulak J. "Targeting nrf2-Mediated Gene Transcription by Triterpenoids and Their Derivatives." *Biomolecules & Therapeutics (Seoul)*. Vol. 20. (2012): 499–505. doi: 10.4062/biomolther.2012.20.6.499.
149. Vomhof-Dekrey EE, Picklo MJ Sr. "The Nrf2-Antioxidant Response Element Pathway: A Target for Regulating Energy Metabolism." *Journal of Nutritional Biochemistry*. Vol. 23, no. 10. (October 2012): 1201–1206. doi: 10.1016/j.jnutbio.2012.03.005.
150. Liby KT, Sporn MB. "Synthetic Oleanane Triterpenoids: Multifunctional Drugs with a Broad Range of Applications for Prevention and Treatment of Chronic Disease." *Pharmacological Reviews*. Vol. 64, no. 4. (October 2012): 972–1003. doi: 10.1124/pr.111.004846.
151. Jiang XY, Zhu XS, Xu HY, Zhao ZX, Li SY, Li SZ, Cai JH, Cao JM. "Diallyl Trisulfide Suppresses Tumor Growth through the Attenuation of Nrf2/Akt and Activation of p38/JNK and Potentiates Cisplatin Efficacy in Gastric Cancer Treatment." *Acta Pharmacologica Sinica*. Vol. 38, no. 7. (July 2017): 1048–1058. doi: 10.1038/aps.2016.176.
152. Yang CM, Huang SM, Liu CL, Hu ML. "Apo-8'-Lycopene Induces Expression of HO-1 and NQO-1 via the ERK/p38- Nrf2-ARE Pathway in Human HepG2 Cells." *Journal of Agricultural and Food Chemistry*. Vol. 60, no. 6. (February 2012): 1576–1585. doi: 10.1021/jf204451n.
153. Linnewiel K, Ernst H, Caris-Veyrat C, Ben-Dor A, Kampf A, Salman H, Danilenko M, Levy J, Sharoni Y. "Structure Activity Relationship of Carotenoid Derivatives in Activation of the Electrophile/Antioxidant Response Element Transcription System." *Free Radical Biology & Medicine*. Vol. 47, no. 5. (September 2009): 659–667.
154. Zhang M, Wang S, Mao L, Leak RK, Shi Y, Zhang W, Hu X, Sun B, Cao G, Gao Y, Xu Y, Chen J, Zhang F. "Omega-3 Fatty Acids Protect the Brain against Ischemic Injury by Activating Nrf2 and Upregulating Heme Oxygenase 1." *Journal of Neuroscience*. Vol. 34. (2014): 1903–1915. doi: 10.1016/j.freeradbiomed.2009.06.008.
155. Nakagawa F, Morino K, Ugi S, Ishikado A, Kondo K, Sato D, Konno S, Nemoto K, Kusunoki C, Sekine O, Sunagawa A, Kawamura M, Inoue N, Nishio Y, Maegawa H. "4-Hydroxy Hexenal Derived from Dietary n-3 Polyunsaturated Fatty Acids Induces Anti-Oxidative Enzyme Heme Oxygenase-1 in Multiple Organs." *Biochemistry and Biophysical Research Communications*. Vol. 43. (2014): 991–996. doi: 10.1016/j.bbrc.2013.12.085.
156. Maher J, Yamamoto M. "The Rise of Antioxidant Signaling—The Evolution and Hormetic Actions of Nrf2." *Toxicology in Applied Pharmacology*. Vol. 244, no. 1. (April 2010): 4–15.
157. Ahmadi Z, Ashrafzadeh M. "Melatonin as a Potential Modulator of Nrf2." *Fundamental & Clinical Pharmacology*. (July 8, 2019). doi: 10.1111/fcp.12498.
158. Uwitonze AM, Razzaque MS. "Role of Magnesium in Vitamin D Activation and Function." *Journal of the American Osteopathic Association*. Vol. 118, no. 3. (March 1, 2018): 181–189. doi: 10.7556/jaoa.2018.037.

159. Houston M. "The Role of Magnesium in Hypertension and Cardiovascular Disease." *Journal of Clinical Hypertension (Greenwich)*. Vol. 13, no. 11. (November 2011): 843–7. doi: 10.1111/j.1751-7176.2011.00538.x.
160. Bertinato J. "Magnesium Deficiency: Prevalence, Assessment, and Physiological Effects." *Handbook of Famine, Starvation, and Nutrient Deprivation*. December 2016. doi: 10.1007/978-3-319-40007-5\_6-1.
161. Liu G, Weinger JG, Lu ZL, Xue F, Sadeghpour S. "Efficacy and Safety of MMFS-01, a Synapse Density Enhancer, for Treating Cognitive Impairment in Older Adults: A Randomized, Double-Blind, Placebo-Controlled Trial." *Journal of Alzheimer's Disease*. Vol. 49, no. 4. (2016): 971–90.

## Chapter 7: How to Reduce Your EMF Exposure

1. Wall S, Wang ZM, Kendig T, Dobraca D, Lipsett M. "Real-World Cell Phone Radiofrequency Electromagnetic Field Exposures." *Environmental Research*. Vol. 171. (April 2019): 581–592. doi: 10.1016/j.envres.2018.09.015.
2. Havas M, Illiatovitch M, Proctor C. "Teacher Student Response to the Removal of Dirty Electricity." Presented at 3rd International Workshop on the Biological Effects of EMFS, October 4–8, 2004. Kos, Greece. <http://electricalpollution.com/documents/WWcolour.pdf>.
3. Wilkins A, Veitch J, Lehman B. "LED Lighting Flicker and Potential Health Concerns: IEEE Standard PAR1789 Update." Institute of Electrical and Electronics Engineers. September 1, 2010. Doi: 10.1109/ECCE.2010.5618050.[https://ece.northeastern.edu/groups/power/lehman/Publications/Pub2010/2010\\_9\\_Wilkins.pdf](https://ece.northeastern.edu/groups/power/lehman/Publications/Pub2010/2010_9_Wilkins.pdf)
4. David Goldman. "Your Samsung TV Is Eavesdropping on Your Private Conversations." CNN Business. February 10, 2015. <https://money.cnn.com/2015/02/09/technology/security/samsung-smart-tv-privacy/index.html>.
5. Matt Day, Giles Turner, and Natalia Drozdiak. "Amazon Workers Are Listening to What You Tell Alexa." Bloomberg. April 10, 2019. <https://www.bloomberg.com/news/articles/2019-04-10/is-anyone-listening-to-you-on-alexa-a-global-team-reviews-audio>.
6. Samuel Burke. "Google Admits Its New Smart Speaker Was Eavesdropping on Users." CNN Business. October 12, 2017. <https://money.cnn.com/2017/10/11/technology/google-home-mini-security-flaw/index.html>.
7. Davies N, Griffin DW. "Effect of Metal-Framed Spectacles on Microwave Radiation Hazards to the Eyes of Humans." *Medical and Biological Engineering and Computing*. Vol. 27, no. 22. (March 1989): 191–97.
8. "How Safe Is a Wireless Baby Monitor?" CBS Local 2, posted by EMFAnalysis on November 22, 2014. <https://www.youtube.com/watch?v=1WONwXP5IvM>.
9. "EMF Radiation Blocked! Smart Meter EMF Radiation Protection." Smart Meter Guard. January 24, 2013. <https://www.youtube.com/watch?v=cmS5pVEZHg>.

## Chapter 8: The Path from Here

1. Mark Hertsgaard and Mark Dowie. "How Big Wireless Made Us Think That Cell Phones Are Safe: A Special Investigation." *The Nation*. March 29, 2018. <https://www.thenation.com/article/how-big-wireless-made-us-think-that-cell-phones-are-safe-a-special-investigation/>.
2. Sarah Ryle. "Insurers Balk at Risk from Phones." *The Guardian*. April 10, 1999. <https://www.theguardian.com/uk/1999/apr/11/sarahryle.theobserver>.
3. "Lloyd's Emerging Risks Team Report." November 2010, version 2.0. [http://s3.amazonaws.com/eakes-production/file\\_attachments/25/lloyds\\_of\\_london\\_emf\\_final\\_november\\_2010.pdf](http://s3.amazonaws.com/eakes-production/file_attachments/25/lloyds_of_london_emf_final_november_2010.pdf). (From <https://www.joneakes.com/jons-fixit-database/2235-lloyds-of-london-bails-out-of-the-cell-phone-health-debate>.)
4. MedSurance A&M Policy Document. U.S. Version 3.2 CFC Underwriting (backed by Lloyd's of London). <http://www.eperils.com/pol/cfc-a&mcmb-v32.pdf>.
5. Available from the company's website, at <https://investor.crowncastle.com/financial-information/annual-reports>.
6. Timothy Schoechle, Ph.D. "Re-Inventing Wires: The Future of Landlines and Networks." The National Institute for Science, Law, and Public Policy. 2008. <http://electromagnetichealth.org/wp-content/uploads/2018/02/ReInventing-Wires-1-25-18.pdf>.

## Appendix A: Damaging Effects of Excessive Peroxynitrite

1. Pacher P, Beckman JS, Liaudet L. "Nitric Oxide and Peroxynitrite in Health and Disease." *Physiological Reviews*. Vol. 87, no. 1. (January 2007): 315-424. doi: 10.1152/physrev.00029.2006.
2. Arteel GE, Briviba K, Sies H. "Protection Against Peroxynitrite." *FEBS Letters*. Vol. 445, no. 2-3. (1999): 226-230. doi: 10.1016/s0014-5793(99)00073-3.
3. Salvemini D, Doyle TM, Cuzzocrea S. "Superoxide, Peroxynitrite and Oxidative/Nitrative Stress in Inflammation." *Biochemical Society Transactions*. Vol. 34, part 5. (November 2006): 965-70. doi: 10.1042/BST0340965.
4. Bartsaghi S, Radi R. "Fundamentals on the Biochemistry of Peroxynitrite and Protein Tyrosine Nitration." *Redox Biology*. Vol. 14. (April 2018): 618-625. doi: 10.1016/j.redox.2017.09.009.
5. Choudhari S, Chaudhary M, Badge S, Gadbail AR, Joshi V. "Nitric Oxide and Cancer: A Review." *World Journal of Surgical Oncology*. Vol. 11. (May 30, 2013): 118. doi: 10.1186/1477-7819-11-118.
6. Singh IN, Sullivan PG, Hall ED. "Peroxynitrite-Mediated Oxidative Damage to Brain Mitochondria: Protective Effects of Peroxynitrite Scavengers." *Journal of Neuroscience Research*. Vol. 85, no. 10. (August 1, 2007): 2216-2223. doi: 10.1002/jnr.21360.
7. Cai Z, Yan LJ. "Protein Oxidative Modifications: Beneficial Roles in Disease and Health." *Journal of Biochemical and Pharmacological Research*. Vol. 1, no. 1. (March 2013): 15-26.

8. Nita M, Grzybowski A. "The Role of the Reactive Oxygen Species and Oxidative Stress in the Pathomechanism of the Age-Related Ocular Diseases and Other Pathologies of the Anterior and Posterior Eye Segments in Adults." *Oxidative Medicine and Cellular Longevity*. Vol. 2016. (2016): 3164734. doi: 10.1155/2016/3164734.
9. MacMillan-Crow LA, Thompson JA. "Tyrosine Modifications and Inactivation of Active Site Manganese Superoxide Dismutase Mutant (Y34F) by Peroxynitrite." *Archives of Biochemistry and Biophysics*. Vol. 366, no. 1. (June 1, 1999): 82-88. doi: 10.1006/abbi.1999.1202.
10. Van der Veen RC, Roberts LJ. "Contrasting Roles for Nitric Oxide and Peroxynitrite in the Peroxidation of Myelin Lipids." *Journal of Neuroimmunology*. Vol. 95, no. 1-2. (March 1, 1999): 1-7. doi: 10.1016/s0165-5728(98)00239-2.
11. Schmidt P, Youhnovski N, Daiber A, Balan A, Arsic M, Bachschmid M, Przybylski M, Ullrich V. "Specific Nitration at Tyrosine 430 Revealed by High Resolution Mass Spectrometry as Basis for Redox Regulation of Bovine Prostacyclin Synthase." *Journal of Biological Chemistry*. Vol. 278, no. 15. (April 11, 2003): 12813-12819. doi: 10.1074/jbc.M208080200.
12. Bartsaghi S, Radi R. "Fundamentals on the Biochemistry of Peroxynitrite and Protein Tyrosine Nitration." *Redox Biology*. Vol. 14. (April 2018): 618–625. doi: 10.1016/j.redox.2017.09.009.
13. Lee DY, Wauquier F, Eid AA, Roman LJ, Ghosh-Choudhury G, Khazim K, Block K, Gorin Y. "NADPH Oxidase Mediates Peroxynitrite-Dependent Uncoupling of Endothelial Nitric-Oxide Synthase and Fibronectin Expression in Response to Angiotensin II: Role of Mitochondrial Reactive Oxygen Species." *Journal of Biological Chemistry*. Vol. 288, no. 40 (October 4, 2013): 28668-28686. doi: 10.1074/jbc.M113.470971.
14. Gochman E, Mahajna J, Reznick AZ. "NF- $\kappa$ B Activation by Peroxynitrite through I $\kappa$ B $\alpha$ -Dependent Phosphorylation versus Nitration in Colon Cancer Cells." *Anticancer Research*. Vol. 31, no. 5. (May 2011): 1607-1617.
15. Kuzkaya N, Weissmann N, Harrison DG, Dikalov S. "Interactions of Peroxynitrite with Uric Acid in the Presence of Ascorbate and Thiols: Implications for Uncoupling Endothelial Nitric Oxide Synthase." *Biochemical Pharmacology*. Vol. 70, no. 3. (August 1, 2005): 343-354. doi: 10.1016/j.bcp.2005.05.009.
16. Pall ML. "The NO/ONOO-Cycle as the Central Cause of Heart Failure." *International Journal of Molecular Sciences*. Vol. 14, no. 11. (November 2013): 22274–22330. doi: 10.3390/ijms141122274.
17. Case AJ. "On the Origin of Superoxide Dismutase: An Evolutionary Perspective of Superoxide-Mediated Redox Signaling." *Antioxidants (Basel)*. Vol. 6, no. 4 (October 30, 2017): 82. doi: 10.3390/antiox6040082.